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CONSUMER ECONOMICS FROM NEO-CLASSICAL
TIMES TO THE PRESENT

Robert Ferber

#100

College of Commerce and Business Administration
University of Illinois at Urbana-Champaign

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March 26, 1973

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Consumer Economics from Neo-Classical Times to the Present

This review attempts to trace the development of consumer economics from neo-classical theory to the present, and to synthesize recent currents of thought in this subject area. The focus of this review is on the determination of total consumption (and saving) rather than on the allocation of the total by categories of consumption. The latter, usually classified under the heading of consumer demand functions, is a major topic in itself and, as it happens, is covered in some detail in a rather comprehensive review article by Brown and Deaton.* At the same time, these studies can not be overlooked either in any review of consumption and saving functions because developments in the two subject areas are often closely interrelated, and the early work on consumer demand functions served as a foundation for some of the later work on the consumption function. For this reason, we start with a brief review of the neo-classical theory of consumer demand, and of its underlying assumptions, which dominated economic thought until the 1930's. This section also shows how the household budget and product demand studies that gained popularity in the 19th century were related to the neo-classical theory of consumer behavior, and how these studies have carried through to the present day.

The manner in which this earlier work led to the development of general theories of the consumption function is considered in Section 2. The relation of these various theories to each other and especially the role of permanent income theories that came into vogue in the 1950's and the 1960's are covered in this section, including a review of the extensive empirical work that has sought to test these theories.

Section 3 of the paper considers the more recent work on the role of the ceteris paribus conditions of the consumption function and their effects on consumer behavior. Special attention is given to the roles of attitudinal

* Brown, Alan, and Deaton, Angus, "Surveys in Applied Economics: Models of Consumer Behavior," Economic Journal, 82, Dec. 1972, 1145-1236.

variables and of wealth variables in consumption because of the considerable attention that has been given to them in recent years. In addition, the burgeoning attention to the determinants of assets and of wealth has produced much interesting work on the relatively new topic of assets functions, the highlights of which are covered in Section 4.

Section 5 of the paper turns to recent advances in the economics literature that are in many ways extensions of received theory, in particular, the human capital approach and the growing interest in time allocation and in the view of the household as a producer. Implications of these recent advances for current theory are examined, and a number of studies under each of these subheadings are brought together and compared.

It would be remiss in a survey article of this type not to give attention to work in the other social sciences that may impinge and provide interesting insights on consumer economic behavior. In particular, attention is given in Section 6 to such relatively recent questions as decision-making within the consumer unit, the use of information and the role of reference groups in decision-making. Decision-making and the likely heterogeneity of consumer units are topics with potentially fundamental implications for consumer theory and hence are given special attention in this part of the paper. Finally, some concluding remarks are presented, with special reference to future directions for research.

1. Neo-Classical Theory

Virtually the entire focus of the neo-classical approach to consumer economics was on developing a theory of value as applied to the individual

consumer. Some allege the idea goes back to at least Aristotle,* but it seems to have been Adam Smith's famous dictum that, "Consumption is the sole end and purpose of all production," which helped to spur the economic theorists of the 19th and early 20th centuries in the use of utility concepts to develop a theory of consumer demand. Menger, Jevons, and Walras, among others, stressed that goods were desired not for their own sake but for the utility or service that the consumer felt he received from them, in other words, the subjective properties of the goods rather than their objective characteristics. Jevons in particular stressed the role of utility in economics and of marginal utility of different products as determining rates of exchange, and in turn, prices.** Menger*** in 1871 took a similar, though less mathematical, point of view, as did Wieser and Bohm Bawerk in his footsteps in the 1880's and 1890's.

Edgeworth, in his book published in 1881,**** developed these ideas further by relating the utility of a good not only to the quantity owned of all other goods. By this approach, he developed the idea of the indifference curve as the locus of points of equal satisfaction of two different goods. Pareto made use of the same concept in the 1890's and 1900's to generalize to criteria for maximizing general welfare, the so-called Pareto optimum. These ideas were elaborated upon in much more detail by Pigou, who combined them with the national income concepts advanced by Marshall.

* Gordon, B.J., "Aristotle and the Development of Value Theory", Quarterly Journal of Economics, 78, February 1964, 115-28.

** Jevons, W.S., The Theory of Political Economy. London: Macmillan Co., First edition, 1871.

*** Menger, Carl, Principles of Economics, translated by J. Dingwall and B.F. Hoselitz. New York: Free Press, 1950. The original work appeared in 1871.

**** Edgeworth, F.Y., Mathematical Psychics: An Essay on the Application of Mathematics to the Social Sciences. London: Routledge & Kegan Paul, 1881.

Marshall carried utility theory further by using its concepts to develop the theory of demand and brought to the forefront the idea, and uses, of the demand curve as a relation between quantities demanded and market price, with all other factors held constant. Marshall also seems to have been responsible for the introduction of the concept of demand elasticity as well as for the refinement of the idea of consumer surplus made possible by the lower market price accompanying higher market demand and consequent availability of larger quantities. Particular attention was given to the distinction between long-run and short-run effects on demand and to related measurement problems,* topics that served as the basis for the development of demand analysis and for much empirical work in later years.

The developments during this neo-classical period were primarily theoretical and mostly concerned with the nature of human wants and how they were translated into market demand and prices. Utility was considered to be the source of human wants which, when combined with scarcity, led to price determination. At a somewhat later stage, interrelations among needs for different products were introduced and was formalized first by Edgeworth through indifference curves, and then more generally by Walras in his system of general equilibrium.

Utility remained an individual notion, however, with the individual knowing what he wanted and having the necessary information to apply the principles of utility analysis. Independence of utilities among individuals seems to have been an implicit assumption. The ceteris paribus assumption

* See, for example, Marshall, Alfred, Principles of Economics. London: Macmillan Co., Eighth edition, 1920. Book III, Ch. 4, and Book V, Ch. 5.

was a foundation of the later development of the demand schedule and of the demand curve, and the influence of variables on quantity other than price was assumed away (though at least Jevons and Marshall seemed to be fully cognizant of the measurement problems involved).

Only scattered attention was given to aggregative relationships. The Physiocrats did emphasize the importance of growth of effective demand to economic prosperity#, while references can be found in the work of Adam Smith to the importance of consumer durables and new product development to the wealth of nations.##Implications regarding aggregate demand relationships were also implicit in Malthus' contention that consumption would be inadequate to meet the needs of an ever-expanding population and the arguments to the contrary by such classical economists as Ricardo, using the profit-investment mechanism, and Say, using his law of markets to support the idea that production creates its own demand.*** Marshall did emphasize the need for study of the distribution of the national income and its component parts,**** but essentially in terms of factor shares and not in terms of sectors of the national income and their interrelations.

#Johnson, Jerah, "The Role of Spending in Physiocratic Theory", Quarterly Journal of Economics, 80, November 1966, 616-32.

##Rosenberg, Nathan, "Adam Smith, Consumers Tastes and Economic Growth", Journal of Political Economy, 76, May-June, 1968, 361-74.

*** These arguments are summarized very well in Schumpeter, J.A., History of Economic Analysis. New York: Oxford University Press, 1954. Other references will be found in Spiegel, H.W., The Growth of Economic Thought. Edgewood Cliffs, Prentice-Hall, 1971, pp. 713-726.

**** Marshall, op. cit., Book VI.

By the mid-nineteenth century consideration was being given to empirical studies of consumer economics at the micro level, partly as an outgrowth of the interest in utility theory, partly from the needs of the times, and partly in the spirit of scientific inquiry. These early studies, as well as most later ones, have been essentially of two types, focusing either on the demand for individual products or on household expenditures and their determinants. Although this dichotomy corresponds to the conceptual equality between product sales and consumer purchases, in practice the two approaches have tended to be very different.

The product approach was grounded strongly in utility theory almost from the beginning, involved the development and application of demand analysis to estimate relationships between price and quantity demanded -- a demand schedule -- invariably from time series data. The idea seems to have originated at the end of the seventeenth century by two English economists, Gregory King and Charles Davenant.* The effect of other variables, even income, was of secondary interest, especially in the nineteenth century when such other data hardly existed anyway. Thus, one of the early economists to involve himself in the development of demand curves and demand studies was Cournot, who focused much attention on the derivation of such curves and on the use of such curves for price determination.** Empirical work on demand curves was mainly pioneered by such statisticians as Farquhar, Galton, Edgeworth, Pearson and Yale in the 1890's and early years of this

* It is a matter of some debate which of these two was first responsible for the empirical demand curve. See Evans, G.H., Jr., "The Law of Demand--The Roles of Gregory King and Charles Davenant", Quarterly Journal of Economics, 81, August 1967, 483-92.

** Cournot, Augustin, Researches into the Mathematical Principles of the Theory of Wealth. New York, Macmillan Co., 1897, English version.

century, with such economists as Gini, Pigou and Moore extending the work between roughly 1910 and 1920.*

The household budget, or expenditure, approach has until recently been based on expenditure data collected on a cross-section basis from samples of individual families. The original interest was largely descriptive, to ascertain how families (usually families headed by factory workers) distributed their expenditures among different goods and services. This is illustrated in the studies by Davies and Eden in England in the 1790's, which were essentially compilations of family budgets.** Later, interest turned to more analytical questions, particularly the manner in which expenditures for such necessities as food, shelter and clothing varied with income level -- micro versions, in effect, of the aggregate consumption function of later years. This interest was reflected in the hypotheses or "laws" advanced for food by Engel in 1857 and for housing by Schwabe in 1868 that the proportion of total expenditure spent for that category declined as household income rises.***

The relationships between specific household expenditures and income level holding other relevant variables constant have come to be known as Engel Curves, and a great deal of effort has been devoted in consumer economics over the past one hundred and more years to deriving such curves and the associated income elast cities.**** The main findings of these

* See Stigler, G.J., "The Early History of Empirical Studies of Consumer Behavior," Journal of Political Economy, 42, April 1954, 95-113.

**As reported in Stigler, G.J., op. cit., p. 95-96.

*** As applied to cross-section data, not over time.

**** For a partial list of these studies, see Morgan, J.N., "A Review of Recent Research on Consumer Behavior," in L.H. Clark, ed., Consumer Behavior: Research on Consumer Reactions. New York, Harper and Bros., 1958, p.93-219.

studies to 1962 have been summarized in a previous review article.* While interest in such studies has not diminished, the focus in more recent years has turned more toward carrying out such studies within the framework of the newer theories of consumer economics or as a specific test of some of these theories. It is to a consideration of these general theories that we now turn.

General Theory of the Consumption Function

The Keynesian Approach

The concept of a consumption function seems to have had its genesis in Keynes' General Theory. Unlike the neo-classical economists who, in the consumer area, were mostly concerned with such micro questions as the meaning of utility and the relationship between the price of a product and the quantity demanded, Keynes was concerned primarily with such macro-economic questions as how to deal with business fluctuations and problems of national welfare. This led him to consider the interrelations of consumption, saving and investment and of the division of income into consumption and savings, which in turn led him to the generalization about individual behavior that consider the interrelations of consumption, saving and investment, the division of income into consumption and saving, and to the generalization that "...men are disposed, as a rule and on the average, to increase their consumption as their income increases, but not by as much as the increase in their income.** Based apparently on casual observation, Keynes advanced this proposition as a cornerstone of his general theory, assuming that it

* Ferber, Robert, "Research on Household Behavior," American Economic Review, 52, March 1962, pp. 19-63.

** Keynes, J.M., The General Theory of Employment, Interest and Money. London: Macmillan Co., 1936, p. 96.

would enable the amount of saving and of consumption to be predicted for any given level of aggregate income. Known later as the absolute income hypothesis, this statement set off a virtual gold rush to translate it into empirical terms and to find "the consumption function," that is, the relation between aggregate consumption and aggregate income. The numerous such studies that were carried out, mostly regressing time series aggregates of consumption expenditures on aggregate disposable income and other variables, clearly confirmed the existence of such a function.* The multiple correlation coefficient usually exceeded .95, the current income variable accounted for most of the variability in consumption, and the marginal propensity to consume out of current income was less than the average propensity, both being less than unity.

The stability of the aggregate consumption function was, however, more of a question. A number of variables other than current income were found to affect consumption expenditures, so that the parameters of the "consumption function", like that of a demand schedule, could be highly sensitive to changes in these other variables. These other variables included wealth, prices, expectations and past income. Even slight changes in the marginal propensity to consume could produce substantial changes in the amount of aggregate saving, and thereby affect substantially the balance between saving and investment, and later experience showed that this happened not infrequently with changes in business conditions. Hence, despite the very satisfactory statistical results obtained (due, incidentally in large measure to the

*An extensive list of these early studies will be found in Orcutt, G.H., and A.D. Roy, A Bibliography of the Consumption Function. Cambridge University, Dept. of Applied Economics, 1949. Mimeographed. A synthesis of these studies to 1950 is contained in Ferber, R., A Study of Aggregate Consumption Functions. New York: National Bureau of Economic Research, Technical Paper 8, 1953.

fact that consumption expenditures comprise over 90 percent of disposable income), question was raised about the adequacy of this variant of the consumption function, the absolute income hypothesis, for explaining aggregate consumption behavior.

Another sort of question on the adequacy of the absolute income hypothesis related to its inability to explain why the aggregate average propensity to consume had remained virtually constant since 1870, at least in the United States,* when cross-section data at various points in time indicated clearly that the marginal propensity declined as incomes rose. With sharply rising levels of aggregate income, one would expect the average propensity to decline over time.

Relative Income Hypothesis

The foundation of the absolute income hypothesis is that consumption or the propensity to consume is a function of the level of income. The foundation of the relative income hypothesis is that these variables depend on relative income, that is, income relative to some prior standard in the case of time series or relative to income of a reference group in the case of cross-section data.

The cross-section form of this hypothesis seems to have been first suggested by Dorothy Brady and Rose Friedman who suggested that the saving rate of an individual depends not on the level of his income but rather on his relative position on the income scale, namely:

$$s/y = a + b \frac{y}{y},$$

where s and y represent individual saving and income, respectively,

* Kuznets, Simon, National Product Since 1869. New York: National Bureau of Economic Research, 1946; Kuznets, Simon, "Proportion of Capital Formation to National Product", American Economic Review, May 1952, 42, 507-26; Goldsmith, Raymond, A Study of Saving in the United States. Princeton: Princeton Univ. Press, Vol. I, 1955, pp. 75-87.

and \bar{y} represents average income.*

Further support for this hypothesis was provided about the same time by Modigliani and by Duesenberry. The latter's support was primarily on a psychological plane, noting the tendency for people to emulate their neighbors and to strive for a continually higher standard of living. Moreover, once a higher standard of living was attained, people seek to maintain it even when incomes go down, whereas when incomes rise people again try to improve their standard of living.**

From a time series point of view, Duesenberry, as well as Modigliani independently***, concluded that the aggregate saving rate was a function of the ratio of current income to the highest previous level of aggregate income, namely:

$$S/Y = a + b \frac{Y}{Y_0}$$

where Y_0 represents the highest level of income previously attained (after deflation for changes in prices and population). On the basis of this new formulation, therefore, the saving ratio over the long run would be expected to be independent of the absolute level of income although it would vary from year to year in accordance with changes in the ratio of current income to previous peak income.

A variant of this formulation was a suggestion by Davis that the past standard be previous peak consumption rather than previous peak income on the basis that it is spending to which people become more adjusted than

* Brady, D.S. and Friedman, Rose, "Savings and the Income Distribution," New York, National Bureau of Economic Research, Studies in Income and Wealth, Vol. 10, 1947, pps. 247-265.

** Duesenberry, James, Income Saving and the Theory of Consumer Behavior, Cambridge, Massachusetts: Harvard University Press, 1949.

*** Modigliani, Franco, "Fluctuations in the Saving-Income Ratio: A Problem in Economic Forecasting," New York, National Bureau of Economic Research, Studies in Income and Wealth, Vol. 11, 1949, pps. 371-443.

income* Vickrey, among others, has also noted that consumption expenditures are likely to be more stable than income and that the data estimates undoubtedly are less inaccurate.**

Considerable evidence was marshalled in support of the relative income hypothesis in the late forties and early fifties; since then all of the interest on general hypotheses seems to have focused on permanent income formulations. On an aggregative level, Davis***, Duesenberry****, and Modigliani***** showed that functions based on the relative income hypothesis provided at least as good statistical fits to the data as the various forms of the absolute income hypothesis. A similar finding was reported by an independent evaluation of the two approaches by Ferber.# At the micro level, Brady and Friedman used the relative income hypothesis to reconcile higher saving rates of village than city families, of farm than non-farm families, and of geographical differences.##

In addition, Duesenberry used this hypothesis in a similar manner,### while Brady showed that family saving was a function not only of the level

* Davis, T.E., "The Consumption Function as a Tool for Prediction," Review of Economics and Statistics, Vol. 34, Aug. 1952, pps. 270-277.

** Vickrey, W.S., "Resource Distribution Patterns and Classification of Families," New York, National Bureau of Economic Research, Studies in Income and Wealth, Vol. 10, 1947, pps. 260-329.

***Davis, op. cit.

**** Duesenberry, op. cit.

***** Modigliani, op. cit.

Ferber, Robert, "The Accuracy of Aggregate Savings Functions in the Postwar Years," Review of Economics and Statistics, May 1955, 37, pps. 134-148.

Brady and Friedman, op. cit.

Duesenberry, op. cit.

of family income but also of the income level of the community in which the family resided.*

These findings do not however necessarily rule out the absolute income hypothesis because a basic tenet of that hypothesis is the ceteris paribus assumption for all variables other than current income. Since on many of these earlier studies data on variables such as wealth were not available to enable the ceteris paribus assumption to be justified, there is no assurance that such other relevant variables were indeed held constant. Thus, Tobin has shown that the smaller financial resources available to black than to white families can be used to explain the apparent failure of the absolute income hypothesis to explain black-white saving differentials and that a similar approach can be used to explain the failure of this hypothesis to account for geographic differences in saving rates.** He also shows how the historical constancy of the saving ratio does not necessarily conflict with the absolute income hypothesis if the tremendous growth in wealth over time served to reduce the need for saving out of current income and hence acted to raise the propensity to consume as real income increased.

* Brady, D.S., "Family Saving in Relation to Changes in the Level and Distribution of Income," New York, National Bureau of Economic Research, Studies in Income and Wealth, Volume 15, 1952, pps. 103-130.

** Tobin, James, "Relative Income, Absolute Income and Saving," in Money, Trade and Economic Growth, Essays in Honor of John Henry Williams, New York, 1951, pps. 131-156.

Permanent Income Theories

The basic idea underlying the permanent income theories of consumption is that the consumer plans his expenditures not on the basis of the income received during the current period but rather on the basis of his long-run or lifetime income expectation. At one extreme, this is obvious, as Friedman points out, since a person does not plan his expenditures for one day according to what income he expects to receive on that particular day.* Applied to the theory of the consumption function, the result is a hypothesis that the consumer plans his expenditures for a given period, whether it is a day or a year, on the basis of a longer run view of the resources that will be available to him.

The two principal forms of the hypothesis were both developed in the 50's more or less independently, one by Milton Friedman and one by Franco Modigliani and his associates. In many respects they are very similar but there are also some key differences. Both theories divide the current income of the consumer unit into permanent (y_p) and transitory components (y_t), and the same is true of consumption expenditures (c_p and c_t , respectively). Both formulations assume the absence of any relationship between transitory income and permanent income or between transitory consumption and permanent consumption. Friedman also assumes no relationship between transitory income and transitory consumption while the Modigliani Formulation allows such a relationship to exist.

*Friedman, Milton, A Theory of the Consumption Function. Princeton, National Bureau of Economic Research, 1957, Page 220.

In both cases, the key relationship is that permanent consumption, c_p , is a linear multiple, k , of permanent income, y_p . To Friedman, the multiple depends on the interest rate, on the ratio of nonhuman to total wealth and on a catch-all variable which includes age and tastes as major components. To Modigliani, the multiple varies with time, explicitly with the age of the consumer unit, and with such other factors as family size.

In both formulations permanent income is obtained as the product of the estimated wealth of the consumer unit and a rate of return at which this wealth is discounted. Friedman puts more emphasis on estimating wealth on the basis of a discounted present value of a stream of expected future incomes whereas Modigliani puts more emphasis on a net worth approach. In both approaches consumption is defined to include the physical consumption of goods and services rather than monetary expenditures; durables are expenditures only to the extent that they are physically consumed in a particular period, not the amount spent for their acquisition. By either formulation, the central hypothesis is that the proportion of permanent income saved by the consumer unit is independent of its income in a particular period, and that transitory income has no (Friedman) or little (Modigliani) effect on current consumption.

While such hypotheses seem simple in theory, testing them gives rise to a great many empirical problems, primarily because of the difficulty of separating the permanent from the transitory components of income and of consumption. Partly for these reasons and partly because of the very rich nature of these hypotheses, a substantial literature has appeared since the late 1950's testing or making use of them. To abstract from this literature, the principal findings would seem to be the following:

*The focus here is on the more recent studies. For a comprehensive review of the older studies as well as of Friedman's and Modigliani's own tests, see Mayer, Thomas, Permanent Income, Wealth and Consumption. Berkeley and Los Angeles: Univ. of California Press, 1972.

1. The concept of permanent income is an invaluable addition to our understanding of economic behavior. In his original work, Friedman had shown how this concept explained various apparent paradoxes of consumer economics, such as the consistency of the aggregate marginal propensity to consume over the last hundred years while incomes were rising and the cross-section marginal propensity declines as income rises.* In addition, however, the concept has been found extremely useful in a wide variety of other studies and in other countries. Thus, Tang Hun Lee found that y_p is a more important determinant of the demand for housing in the U.S. than current income,** while a similar finding for total expenditures was reported for Chile by Roger Betancourt.*** Similar support for the practical value of the concept has been provided, among others, by Laumas for Canada#, by Landsberger for Israel##, and by Ramanathan for India.### The concept has also been extended to other areas of economics, as exemplified by Eisner's use of it in investment analysis.#### In another

*Op. cit., Chapter 5.

**Lee, T.H., "The Stock Market Elasticities of Nonfarm Housing," Review of Economics and Statistics, 46, Feb. 1964, 82-90; also by Lee, "Housing and Permanent Income," Review of Economics and Statistics, 50, November 1968, 480-90.

***Betancourt, Roger, "The Normal Income Hypothesis in Chile," Journal of the American Statistical Association, 66, June 1971, 258-63.

#Laumas, P.S., "A Test of the Permanent Income Hypothesis," Journal of Political Economy, 77, Sept.-Oct., 1969, 857-61.

##Landsberger, Michael, "Consumer Discount Rate and the Horizon: New Evidence," Journal of Political Economy, 79, Nov.-Dec., 1971, 1346-59.

###Ramanathan, R., "Measuring the Permanent Income of a Household: An Experiment in Methodology," Journal of Political Economy, 79, Jan.-Feb., 1971, 177-85.

####Eisner, Robert, "A Permanent Income Theory for Investment: Some Empirical Explorations," American Economic Review, 57, June, 1967, 363-90.

interesting application, Branson and Klevorick have shown that when consumption functions are estimated using permanent income variables there is strong evidence of money illusion.* Moreover, from an aggregative forecasting point of view, Craig found that saving functions incorporating permanent income concepts were either the best or equal to the best of seven alternative hypotheses tested.** On the other hand, Liviatan has contended that cross-section data in Israel suggest that current income is the main concept of relevance to explaining consumption.^{△△}

2. Nevertheless, the validity of the basic tenet of the permanent income hypothesis remains questionable: it is not at all clear that the permanent income elasticity is unity. Ando and Modigliani did find that "Consumption is in fact roughly homogeneous in income and assets" in annual time series regressions on U.S. data for 1929-59 (excluding 1941-46),*** as did Spiro. ☐

Eisner obtained an income elasticity of virtually 1.0 for 1950 cross-section data among city-size classes but when occupation of head and age of head are introduced as additional instrumental variables the elasticities drop to the .8-.9 range.^a

*Branson, W.H., and Klevorick, A.K., "Money Illusion and the Aggregate Consumption Function," American Economic Review, 59, December 1969, 832-50.

**Craig, G.D., "Predictive Accuracy of Quarterly and Annual Aggregate Saving Functions," Journal of the American Statistical Association, 65, September 1970, 1131-45.

^{△△}Liviatan, Nissan, "Estimates of Distributed Lag Consumption Functions from Cross-Section Data," Review of Economics and Statistics, 47, Feb. 1965, 44-53.

***Ando, Albert, and Modigliani, Franco, "The 'Life Cycle' Hypothesis of Saving: Aggregate Implications and Tests," American Economic Review, 53, March 1963, 55-84.

☐Spiro, Alan, "Wealth and the Consumption Function," Journal of Political Economy, 70, Aug. 1962, 339-54.

^aEisner, Robert, "The Permanent Income Hypothesis: Comment," American Economic Review, 48, Dec. 1958, 972-90; also see Houthakker, H.S., "The Permanent Income Hypothesis: Reply", same issue, 991-3.

Many other studies using regression models obtained an income elasticity clearly less than unity, usually about .9. This is true of Lee for housing in the U.S.[#], Leeuw also for housing,^Δ Wright for all expenditures in the U.S.,^{##} of Taubman for U.S. expenditures^{###}, of Laumas and Mohabbat for the U.S.^{####}, of Betancourt for Chile^{#####}, and Laumas for Canada.^{*} Holbrook and Stafford suggest that several types of permanent income need to be distinguished, and they find that the marginal propensity varies by type of income, from a maximum of .9 for husband's and wife's earnings to .35 for transfer income.^{**}

3. The assumed lack of effect of transitory income on current consumption also does not receive much support from empirical tests. Analyses of two windfall payment situations--by Bodkin of one-time insurance dividends to U.S. veterans,^{***} and by Kreinin of German restitution payments to Israeli residents^a--found significant expenditures from those

[#] Lee, op. cit.

^Δ Leeuw, F. de, "The Demand for Housing: A Review of Cross-Section Evidence," Review of Economics and Statistics, 52, February 1971, 1-10. Actually, Leeuw concludes that the elasticity for rental housing is less than or at most equal to unity, and that for owner-occupied housing is well above unity.

^{##} Wright, Colin, "Estimating Permanent Income: A Note," Journal of Political Economy, 77, Sept.-Oct. 1969, 845-50.

^{###} Taubman, Paul, "Permanent and Transitory Income Effects," Review of Economics and Statistics, 47, Feb. 1965, 38-43.

^{####} Laumas, P.S., Mohabbat, K.A., "The Permanent Income Hypothesis: Evidence from Time Series Data," American Economic Review, 42, Sept. 1972, 730-4.

^{#####} Betancourt, op. cit.

^{*} Laumas, op. cit.

^{**} Holbrook, Robert and Stafford, Frank, "The Propensity to Consume Separate Types of Income: A Generalized Permanent Income Hypothesis," Econometrica, 39, Jan. 1971, 1-22.

^{***} Bodkin, Ronald, "Windfall Income and Consumption," pp. 175-87, in Irwin Friend and Robert Jones (editors), Proceedings of the Conference on Consumption and Income, Vol. 2, Philadelphia, 1960.

^a Kreinin, M.E., "Windfall Income and Consumption," American Economic Review, 51, June 1961, 388-90.

receipts, and not only for durable goods, which might in large part be considered saving. More general regression models have also obtained indications of a strongly positive marginal propensity to consume out of y_t in Canada of .45^{##}, and between .55 and .84 in the U.S.^{###} A marginal propensity to save out of y_t fully equal to that out of y_p was obtained by Taubman in analyzing cross-section data.^{*} Holmes, in a time series analysis of U.S. data for 1905-51 found that y_t as well as y_p were statistically significant in explaining fluctuations in c_p .^{**} In still another study of U.S. time series data, Smith concludes that for explaining variations in durable goods expenditures, y_t is more important than y_p and that windfall income accounts for most of the variation in purchases of durable goods.^Δ

Katona and Mueller found that response to higher income in the U.S. in 1964-65 as a result of unexpected tax decrease went mostly for durables and saving but for other goods and services as well.^{ΔΔ}

A recent time series study by Darby shows in an interesting fashion how transitory income is allocated among money, financial assets and durable goods, with the fraction going into durable goods varying inversely with the ratio of "transitory" assets to permanent assets. □

The assertion by the author, however that the study supports a zero

[#] Op. cit.

[#] Laumas and Mohabbat, op. cit.

^{*} Taubman, Paul, "Permanent and Transitory Income Effects," Review of Economics and Statistics, 47, Feb. 1965, 38-43.

^{*} Holmes, J.M., "A Direct Test of Friedman's Permanent Income Theory," Journal of the American Statistical Association, 65, Sept. 1970, 1159-62.

^Δ Smith, R.E., "The Demand for Durable Goods," Journal of Political Economy, Oct. 1962, 500-4.

^Δ Katona, George, and Mueller, Eva, Consumer Response to Income Increases. Washington, D.C.: The Brookings Institution, 1968.

^Δ Darby, M.R., "The Allocation of Transitory Income Among Consumers' Assets," Canadian Economic Review, 62, December, 1972, 928-41.

effect of transitory income on consumption is hardly valid in view of the initial assumption that "All transitory income is assumed to be saved" (p. 928), not to mention a highly significant coefficient of .5 for transitory income in the one aggregate consumption function shown in the article.

Proponents of the permanent income hypothesis can argue, however, that some nonzero marginal propensity out of transitory income is only to be expected to the extent that transitory income gives rise to higher permanent income, say, through interest on newly invested such income, or through changes in expectations. Whether such reasoning can explain away the many negative findings on this point seems very doubtful.

4. In addition, y_p and y_t may not be unrelated either. In his study, Holmes found a strong correlation between these two variables,^{**} as did Laumas and Mohabbat.^{***} In time series studies, such a relationship could be an artifact of the process of estimating y_p as a weighted moving average distributed lag of measured incomes, with y_t as the residual.[#] In fact, in a study of the determinants of durable goods purchases, Motley argues that expected future income is actually a function of transitory income.^{##}

^{**} Holmes, op. cit.

^{***} Op. cit.

[#] Holmes, J.M., "A Condition for Independence of Permanent and Transitory Components of a Series," Journal of the American Statistical Association, 66, March 1971, 1345; also Ebberler, D.H., "Permanent Component of a Series," Journal of the American Statistical Association, 68, June 1973.

^{##} Motley, B., "Consumer Investment, Expectations and Transitory Income," Western Economic Journal, 7, Sept. 1969, 223-9.

To sum up, as of the present time, the concept of permanent income seems to be firmly established as both operational and highly meaningful. Specific postulates of the permanent income hypothesis have not received much support from empirical tests but have led to modifications that may be simpler and more realistic. Thus Irwin Friend and Paul Taubman have substituted the idea of "normal income" for "permanent income". They define normal income in terms of a trend or average of income in recent years in the case of time series data* or as a function of key socioeconomic variables in the case of cross-section data,* in each case the frame of reference, e.g., time horizon, varying with the particular problem. They show in various studies that this approach yields highly meaningful results both for "normal income" effects and for transitory income effects, the latter defined as the difference between measured and "normal" incomes.

More recently, Thomas Mayer has suggested a compromise between the permanent income hypothesis and the relative income hypothesis, which "asserts that the income elasticity of consumption is greater for permanent income than for transitory income, but that it is neither unity for one nor zero for the other. It also claims that there is some lag in the consumption function but that this lag is substantially shorter than the lag found by Friedman or Modigliani."* In his study, Mayer finds support for his "standard income" theory on the double grounds that the marginal propensity to consume out of transitory income is generally from 40 to 90 percent of that out of permanent or normal income, and that at least some lag effects on consumption appear to be very short.*

* Taubman, Paul, "Permanent and Transitory Income Effects," Review of Economics and Statistics, 47, Feb. 1965, 38-43.

* Friend, Irwin, "The Propensity to Save in India," 153-170 in Lokanathan, P.S. (ed.), Economic Development: Issues and Policies. Bombay, India: Vora and Company, 1966.

* Mayer, Thomas, op. cit. pp. 45-46.

* But Mayer admits that his results are very mixed on this point and that other types of lags may cover the entire life span of the household, e.g., op. cit., p. 356.

Stock adjustment theories

The view that economic behavior represents a continuous process of adjustment has become increasingly popular in the last 10 to 15 years. For a while, this view was manifested in two seemingly diverse ways. One approach was to take a more ephemeral view of stocks in the form of tastes and habits which conditioned consumer behavior over a long period of years and which accounted to a large extent for the positive autocorrelation in consumer purchases of many nondurables and similar goods and services. Thus, once a person begins to smoke cigarettes he tends to continue to do so, and to consume cigarettes at a steady rate as the habit becomes more ingrained. Hence, the link between current and past purchases is habit formation, a view developed by both Duesenberry and Modigliani in their classic works on this subject,* as noted in an earlier section. This view was supported by work by T.M. Brown on Canadian time series data with the modification he suggested that the decline of the effects of past habits in consumption is continuous and is not subject to a ratchet effect.[#]

More recently, the theoretical role of habit formation on demand functions was explored by Gorman^{##} and by Pollak,^{###} the latter using this

*Duesenberry, James, loc. cit., Chapter 3; Modigliani, Franco, "Fluctuations in the Saving Income Ratio, A Problem in Economic Forecasting," Studies in Income and Wealth, Vol. II, New York: National Bureau of Economic Research, 1949, 371-443.

[#]Brown, T.M., "Habit Persistence in Consumer Behavior," Econometrica, 20, July 1952, 355-71.

^{##}Gorman, W.M., "Tastes, Habits and Choices," International Economic Review, 8, June 1967, 218-22.

^{###}Pollak, R.A., "Habit Formation and Dynamic Demand Functions," Journal of Political Economy, 78, July-Aug., 1970, 745-63.

concept to distinguish between long-run and short-run demand functions, something that Brown had also focused on. In an earlier empirical study covering time series data for 13 countries, Houthakker had also noted that within country (time series) regressions capture mostly short-run effects and between country (cross-section) regressions mostly long-run effects, and that theoretically as well as empirically the two types of elasticities are very different and should be treated as such.^Δ

The other view sought to explain why consumer purchases of many durables followed an opposite pattern -- the purchase of, say, a refrigerator one quarter, or year, was not likely to be followed by another purchase of the same good in the next period. Incorporating the obvious elements of depreciation and obsolescence, this approach viewed stocks as a physical accumulation of goods desired by consumers which led to additional purchases as desired stocks of, say, durables deviated from actual stocks. A simple form of this hypothesis would be:

$$(a) S_t - S_{t-1} = \lambda (S_t^* - S_{t-1}) \quad \lambda > 0$$

where S_t is actual stocks at time t and S_t^* is the desired stock. To the extent that the desired stock at t exceeds (is below) actual stocks in the previous period, the consumer will be motivated to add to (subtract from) his actual stock by a multiple, λ , of this difference.[#] By postulating that S_t^* is a function of such observable variables as income and family size, and making the appropriate substitution, an equation is obtained whose

^ΔHouthakker, H.S., "New Evidence on Demand Elasticities," Econometrica, 33, April 1965, 277-88.

[#]While in an aggregative sense only positive values of the right-hand expression are allowed, for individual consumers and term could also be negative, e.g., an older couple wanting to move to a smaller house after their children have left home.

parameters can then be estimated. This approach has proved successful in studying the demand for a wide variety of durable goods, as illustrated in the volume edited by Harberger* and in other studies by Huang for adults# and by Wu for all household durables.##

Hence, on the one hand theory had given us a stock of psychological tastes and habits that accounted for positive autocorrelation in some purchases while on the other hand we had a stock of physical goods that accounted for negative autocorrelation in other types of purchases. In their epic study, Houthakker and Taylor (H-T) combined the two views in a single theory.** Their basic postulate is that current purchases depend on current as well as past values of the variables that determine consumer purchases and that these values are reflected in the current stock of the consumer. In simple form:

$$(b) \quad q_t = \alpha + \beta s_t + \gamma x_t$$

where q_t is purchases in period t , s is the stock and x is income, all at the micro level, and α , β , γ are parameters. β is the stock adjustment parameter: if β is positive, that product (category) is said to be influenced by habit purchases so that an increase in the stock leads to still more purchases; whereas if β is negative the stock adjustment effect is predominant and an increase in the stock serves to depress new purchases.

*Harberger, A.C. (editor), The Demand for Durable Goods. Chicago: University of Chicago Press, 1960.

#Huang, D.S., "Discrete Stock Adjustment: The Case of Demand for Automobiles," International Economic Review, 5, Jan. 1964, 46-62; also his, "Initial Stock and Consumer Investment in Automobile," Journal of the American Statistical Association, 58, Sept. 1963, 789-98.

##Wu, De-Min, "An Empirical Analysis of Household Durable Goods Expenditures," Econometrica, 33, Oct. 1965, 761-80.

**Houthakker, H., and Taylor, L.D., Consumer Demand in the United States. Cambridge, Harvard University Press, second edition, 1970.

Like s_t^* in (a), s_t is not observable, but it is easily eliminated by relating the change in stock to purchases and to depreciation, making the appropriate substitutions and solving, resulting in an equation relating change in purchases to purchases, change in income and income.* H-T also present an alternate derivation based on a variant of (a) that leads to the same result.

Empirical tests provide strong support for the H-T model. In their study of U.S. time series expenditures by 82 categories, H-T find that the dynamic formulation is superior almost invariably to the static formulation, that the flow adjustment form is appropriate for 14 of the categories (most of these in dynamic form too); and that of 65 expenditure categories for which the stock coefficient was estimated, the large majority, 46 (or 61% of expenditures) were positive, suggesting habit formation.** Similarly favorable results were obtained for Canadian time series, but less favorable results for the Netherlands and Sweden because of a number of wrong signs of coefficients and lower goodness of fit.*** The habit formation hypothesis also receives strong support from an analysis of Canadian time series data by Oksanen for major categories of consumption#

*Op. cit., Chapter 1. For estimation, H-T also add price terms to this equation.

**Ibid, Chapters 3, 4.

***Ibid, Chapter 5.

#Oksanen, E.H., "Testing an Aggregate Consumption Model for Canada," Canadian Journal of Economics, 5, February 1972, 96-109.

as well as in a study by Lee of income and expenditures in 28 Japanese cities between 1955 and 1968.* In the latter study, the H-T model was judged superior to distributed lag and expected income models. Habit formation tended to be the predominant variable.

An extension of the habit formation hypothesis has been proposed by McMahon, who argues that two separate and distinct stock effects need to be taken into account in explaining consumer purchases -- physical stocks and psychological stocks of tastes and habits. Rather than cancelling out, McMahon includes both types of stock variables in cross-sections equations explaining variations principally in purchases of a wide variety of durables and financial holdings, and shows that such purchases tend to be associated positively with psychological stocks and negatively with physical stocks (including financial holdings as part of this category).** In fact, Pollak had also suggested the two effects could not be combined because a fixed assumption of the habit formation model is that the effects of current purchases are not related to future preferences and future consumption but this is hardly true of consumer durables, so that theoretically the habit adjustment coefficient should not be allowed to be negative.□

Apart from the recognized importance of stock effects, if one other thing is clear from the theoretical and empirical work of the last 10-15 years, it is that consumer purchases are best explained in terms of a dynamic view of income. This may be some sort of permanent income concept, a distributed lag view of the world, or something else. However,

*Lee, Feng-Yao, "Estimation of Dynamic Demand Relations from a Time Series of Family Budget Data," Journal of the American Statistical Association, 65, June 1970, 586-97.

**McMahon, W. W., "Dynamic Interdependence in Consumer Stocks, Tastes and Choices," unpublished manuscript.

□ Pollak, op. cit., p. 761.

formulated, it is surprising to note how often the testable, and successful, form of the hypothesis reduces to the inclusion of lagged consumption as the manifestation of income effects. Thus, Husby uses such a variable to support the plausibility of nonlinear income effects,* Zellner and Geisel found this form to be quite effective,** and in his extensive forecasting tests Craig finds that functions including lagged consumption are among the most accurate.*** Craig finds that the combination of this approach and that of habit formation seems best, and that is also what Young finds in his study of the demand for air transportation.****

3. Ceteris Paribus Variables

As is evident from the foregoing material, considerable progress has been made in incorporating the traditional ceteris paribus variable, tastes, directly into the consumption function. However, income and lagged consumption variables cannot reflect all the diverse factors that affect consumption, and research on the identification and specification of these other factors has continued along many different lines. The principal such factors are reviewed briefly in this section.

*Husby, R.D., "A Nonlinear Consumption Function Estimated from Time-Series and Cross-Section Data," Review of Economics and Statistics, 52, Feb. 1970, 76-9. Nonlinear income effects were also reported by Wu, op. cit.

**Zellner, Arnold, and Geisel, M.S., "Analysis of Distributed Lag Models with Application to Consumption Function Estimation," Econometrica, 38, Nov. 1970, 865-88.

***Craig, G.D., op. cit.

****Young, K.H., "A Synthesis of Time-Series and Cross-Section Analyses: Demand for Air Transportation Service," Journal of the American Statistical Association, 67, Sept. 1972, 560-6.

1. Wealth

To the proponents of permanent income, that concept is synonymous with wealth so to include wealth as a separate variable in a consumption function is redundant. Still, permanent income is a nebulous concept while the growing availability of consumer wealth data is an irresistible attraction for empirical work.* This is especially so since the studies in the 1960's utilizing wealth variables serve to reinforce earlier findings** that they influence consumer spending apart from income effects.

The main focus has been on components of wealth rather than on total wealth or net worth, though at least three studies were reported using the latter. In a time series study of U.S. data, Evans obtained mixed results, a wealth variable being significant in a long-period (1929-62) consumption function but not in a post-World War II function.*** Ramanathan found net worth to have a strong negative effect on the saving of Delhi households apart from an income effect.****

Using the 1962-63 data from the Federal Reserve survey of family financial characteristics, Dorothy Projector finds that net worth affects consumption in accordance with the life-cycle hypothesis of Modigliani and Ando.# In other words, the fraction of net worth spent for consumption tends to rise sharply with age. However, the coefficients of net worth, while

*Just like funds availability tends to stimulate research on that particular subject, so data availability tends to promote the development of approaches using them, plus the fact that wealth in consumer economics has long been a major interest in itself.

**Summarized in Verber, op. cit., pp. 40-43.

***Evans, M.K., "The Importance of Wealth in the Consumption Function," Journal of Political Economy, 75, Aug. 1967, 335-51.

****Ramanathan, R., "An Econometric Exploration of Indian Saving Behavior," Journal of the American Statistical Association, 64, March 1969, 90-101.

#Modigliani, Franco, and Ando, Albert, "Tests of the Life Cycle Hypothesis of Savings," Bulletin of the Oxford University Institute of Statistics, 19, May 1957, pp. 99-124.

statistically significant, are many times smaller than disposable income, the other independent variable in these regressions.* The net worth effect that Modigliani and Ando obtain in a study of U.S. data is similarly small and statistically significant, the coefficients ranging between .04 and .08.**

The two principal components of wealth whose effects on consumption have been studied individually are liquid assets and capital gains. Liquid assets seems to be an independent determinant of various types of expenditures. Zellner, Huang and Chan in a study of quarterly time series 1947-62 data for the U.S. conclude that "imbalances in consumer liquid assets holdings exert a statistical and economically significant influence on consumption expenditures.*** Liquid asset holdings were found to influence durable goods expenditures in a study of cross-section data by Fisher**** and to affect per capita consumption of nondurable goods and services in a time series study of U.S. data by Cheng.# In another U.S. cross-section study, however, Cragg and Uhler using a multinomial extension of a linear logit model reported that a liquid assets variable was not significant in influencing car purchases.## The weight of the evidence so far, however, is in favor of including a liquid assets variable in a consumption function, if available.

*Projector, D.S., Survey of Changes in Family Finances. Washington: Federal Reserve Board, 1968, Chapter 3.

**Ando, Albert, and Modigliani Franco, "The Life Cycle Hypothesis of Saving," American Economic Review, 53, March 1963, 55-24; also "Correction," in March 1964 issue, 111-2.

***Zellner, A., Huang, D.S., Chan, L.C., "Further Analysis of the Short-Run Consumption Function with Emphasis on the Role of Liquid Assets," Econometrica, 33, July 1965, 571-81.

****Fisher, J.A., "Consumer Durable Goods Expenditures, with Major Emphasis on the Role of Assets, Credit and Intentions," Journal of the American Statistical Association, 58, Sept. 1963, 648-57.

#Cheng, P.L., "Consumption of Nondurable Goods and Contractual Commitment of Disposable Income," Review of Economics and Statistics, 45, Aug. 1963, 254-63.

##Cragg, J.G., and Uhler, R.S., "The Demand for Automobiles," Canadian Journal of Economics, 3, Aug. 1970, 386-406.

In the case of capital gains, Arena concluded that they "had little or no impact on aggregate consumption, primarily because of the highly skewed distribution of stock ownership," based on annual and quarterly time series regressions for 1946-64.* However, using an improved set of estimates of capital gains and a model that allows for a distributed lag effect of capital gains, Bhatia concludes from time series regressions for 1948-64 using a model based on the permanent income approach that both accrued and realized capital gains affect consumption expenditures, the latter defined to include only the depreciation component of durable goods spending.** The marginal propensity to consume out of either type of gains was about .06, highly significant statistically but far below the comparable values (.70 to .80) obtained for the income variable. In addition, the lag effect of capital gains on consumption seemed to be substantially longer than that of income.

A negative component of wealth that not surprisingly is found to influence durable goods expenditures is credit. Studies of cross-section data in the U.S. by Fisher*** and by Lee**** both found the probability of durable goods purchases to vary (positively) with use of credit, and the latter reported that the size of the purchase also tended to increase with use of credit but that credit users exhibited lower income elasticities than those paying all cash. Ball and Drake showed that variations in credit variables in England exerted major influence on durable goods spending during a period of credit restriction.#

*Arena, J.J., "Postwar Stock Market Changes and Consumer Spending," Review of Economics and Statistics, 47, Nov. 1965, 379-91.

**Bhatia, K.B., "Capital Gains and the Aggregate Consumption Function," American Economic Review, 62, Dec. 1972, 866-879.

***Fisher, J.A., op. cit.

****Lee, Maw Lin, "Income, Income Change and Durable Goods Demand," Journal of the American Statistical Association, 59, Dec. 1964, 1194-1202.

#Ball, R.J., and Drake, P.S., "The Impact of Credit Control on Consumer Durables Spending in the United Kingdom, 1957-61," Review of Economic Studies, 30, Oct. 1963, 181-94.

The most comprehensive attempt to date to obtain saving functions by category is a study by Lester Taylor applying multiple regression techniques to quarterly Flow-of-Funds time series data for 1954-70 to 14 different saving and asset components of those data, based on a model allowing for stock adjustment and for differences by age groups.* Among the principal findings is the substantial effect of wealth on saving but varying with the type of wealth involved. Thus, the stock of durable goods is found to influence total saving, housing stock influences gross saving and gross investment, and holdings of corporate securities are found to influence both saving and consumption (the latter defined as the sum of expenditures for nondurables and services). Capital gains are found to have roughly twice as great an effect on saving as on consumption.

* Taylor, L.D., Saving of U.S. Households: Evidence From the Quarterly Flow-of-Funds New York: National Bureau of Economic Research, unpublished manuscript.

2. Interest Rates and Other Prices

The main findings on significance of interest rates on consumer spending relate to durable goods. Thus, Hamburger found from an analysis of quarterly data for 1953-64 that expenditures for autos as well as for other durables were influenced (negatively) by interest rates as well as by product prices.* Numerous studies of housing demand also found interest rates to be an important determining variable. Although in their study, Zellner et. al.** suggest that interest rates affect total consumption expenditures, this does not yet seem to have been documented empirically.

In time series studies of the demand for individual products, or consumption categories, prices of those and of competing products are naturally key variables; the lack of such data in many cross-section studies is a major shortcoming and very likely yields unwarrantedly high estimates of the effect of income and of other variables that may be closely and positively correlated with prices. A review of such studies is outside the scope of this article and would be a major task in itself. It is of interest to note here, however, that at least one study has found that both income and price elasticity estimates are affected by the prices used for the category (food) but not by the type of price index.***

At the level of aggregate expenditures, the variables are invariably deflated by price indexes, on the plausible assumption that consumers are influenced by variables in "real" rather than monetary terms. Nevertheless, evidence continues to accumulate that this assumption is contrary to fact, and

*Hamburger, M.J., "Interest Rates and the Demand for Consumer Durable Goods," American Economic Review, 57, Dec. 1967, 1131-53.

**Zellner, Huang, and Chau, op. cit.

***Tolley, G.S., Wang, Y., Fletcher, R.G., "Reexamination of the Time Series Evidence on Food Demand," Econometrica, 37, Oct. 1969, 695-705.

that consumers are subject to money illusion. If such illusion exists, consumers would be expected in the face of rising prices to shift expenditures from the future to the present.* In fact, this is what Branson and Klevorick found in their study, namely, a highly significant and positive coefficient of a price level variable with per capita real consumption as dependent and after including real income and real net worth.** After testing various alternative explanations, they come to the firm conclusion that, "in the short run the price level has an independent effect on real consumption due to what is commonly called money illusion" (P. 846)

3. Socioeconomic Variables

Every cross-section study of consumption functions will include a set of socioeconomic variables, the usual criterion of selection being the very pragmatic one of throwing in all such variables available. Not surprisingly in view of the large sample sizes, often in thousands, a subset if not all of these variables turn out to be significant, and there the matter is left to rest. As a rule, the focus of the study is on another question altogether, and the socioeconomic variables are added essentially for completeness of the model formulation. Other than the development of the life cycle concept and its role on expenditures and saving roughly 20 years ago,*** theorists seem to have neglected this topic.

Even studies focusing on the role of socioeconomic variables in the consumption function have been virtually nonexistent. One interesting exception is an attempt by Agarwals and Drinkwater to use Canadian cross-section data

*Power, J.H., "Price Expectatation, Money Illusion and the Real-Balance Effect," Journal of Political Economy, 67, April 1959, 131-43.

**Branson and Klevorick, op. cit.

***Summarized in Ferber, op. cit. For a relatively recent example, see Kreinin, M.E., and Lininger, C.A., "Ownership and Purchase of New Cars in the U.S.," International Economic Review, 4, Sept. 1963, 310-24.

to regress the marginal propensity to consume on socioeconomic factors, principally presence of a working wife, and then incorporate the resulting estimates as additional variables interacting with income in aggregate time series consumption functions.* The result is sufficiently promising (moderately significant interaction effects) to warrant further attention to such approaches. One other attempt had been made to incorporate effects of socioeconomic variables in consumption functions by Lippitt.** This method was tested on nine consumption categories by Laughhunn and proved clearly superior to a straight time series model in three cases, about the same for three others, and worse for the remaining three.*** Further theoretical and empirical work in this subject area would seem desirable.

4. Regional Differences

Regional differences may exist in consumption after other relevant variables have been taken into account. Palda found such differences in fitting Engel curves to 1959 survey data for 11 expenditure categories between two Canadian provinces.**** In a more extensive study, also for Canada, Gillen and Guccione used generalized least squares to estimate time series consumption functions for a number of provinces with very good results.#

*Agarwals, R., and Brinkwater, J., "Consumption Functions with Shifting Parameters Due to Socioeconomic Factors," Review of Economics and Statistics, 54, Feb. 1972, 39-96.

**Lippitt, V.G., Determinants of Consumer Demand for Housefurnishings and Equipment. Cambridge: Harvard Univ. Press, 1950; described in Ferber, op.cit, p. .

***Laughhunn, D.J., On the Predictive Value of Combining Cross-Section and Time-Series Data in Empirical Demand Studies. Urbana, Ill.: Univ. of Illinois Bureau of Economic and Business Research, 1969.

****Palda, K.S., "Comparison of Consumer Expenditures in Quebec and in Ontario," Canadian Journal of Economics and Political Science, 33, Feb. 1967, 16-20

#Gillen, W.J., and Guccione, A., "The Estimation of Postwar Regional Consumption Functions in Canada," Canadian Journal of Economics, 3, May 1970, 276-90.

In a very different approach on Indian survey data, Bhattacharya and Mahalanobis utilized measures of concentration to find substantial regional disparities in per capita household consumption expenditures.* How climatic and cultural factors act to bring about such differences, and even their extent, is clearly something for future study.

5. International Differences

If consumption functions differ among regions within a country, one would also expect differences among countries, and this phenomenon by now seems to be well documented. Indeed, a fair amount of work has been done over the past ten to fifteen years on international differences in consumption functions, partly to study this phenomenon in its own right and partly to test some of the theories of the consumption function on an international scale.

Sharp differences in the marginal propensity to save among countries was reported in a study by Johnson and Chiu based on regressions of aggregate saving on income for each of 44 countries during the period 1950-61.** Similar results were obtained when trend income was substituted for current income as a proxy for permanent income, results which led the authors to conclude that, "there does not exist one true world saving function in which saving is a function of current income" (page 33).

A somewhat similar point had been made by Houthakker, as noted earlier, in estimating demand elasticities for parts of 12 years (1948-1959) over 13 countries in which he concluded that there is no such thing as a single

*Bhattacharya, N., and Mahalanobis, B., "Regional Disparities in Household Consumption in India," Journal of the American Statistical Association, 62, March 1967, 143-61.

**Johnson, D.W., and Chiu, J.S.Y., "The Saving-Income Relation in Under-developed and Developed Countries," Economic Journal, 78, June 1968, 321-33.

elasticity of demand; rather the elasticity estimates from the within country regressions were felt to capture mostly short-run effects while the elasticity estimates from the between-country regressions estimated mostly long-run effects.* Differences among countries were also very pronounced.#

Permanent income concepts have also been applied to international data. In one study covering 22 countries, Houthakker reported that the marginal propensity to save out of "normal" income was approximately .08 on the average, based on time series regressions with normal income estimated as the average income in that country for the entire period of observation.** A similar result is reported by Friend and Taubman; the overall marginal propensity to save out of normal income based on time series regressions for 1953-60 for 22 countries is estimated at between .06 and .07, with a higher marginal propensity out of transitory income than out of normal income.***

Testing the permanent income theory on budget data for various countries, Mayer finds a negative correlation between permanent income and consumption, using average income for broad occupational groups as a measure of permanent income.**** He concludes that the marginal propensity to consume out of permanent income cannot be equal to the average propensity, contrary to the assumption of the permanent income theory. On the other hand, Singh and

*Houthakker, H.S., op. cit.

**Houthakker, H.S., "Some Determinants of Saving in Developed and Undeveloped Countries," Vienna, Proceedings of the International Economic Association, 1964.

***Friend, Irwin, and Taubman, Paul, "The Aggregate Propensity to Save: Some Concepts and Their Application to International Data," Review of Economics and Statistics, 48, May 1966, 113-23.

****Mayer, Thomas, "The Propensity to Consume Permanent Income," American Economic Review, 56, December 1966, 1158-77.

#As also found by a different specification in a study by Goldberger, A.S., and Gamaletsos, T., "A Cross-Country Comparison of Consumer Expenditure Patterns" European Economic Review, 1, Spring 1970, 357-400.

Drost finds support for the permanent income theory from time series regressions on 11 countries in that the marginal and average propensities to consume are approximately equal, at least by one of two estimation methods.* They find considerable differences in the marginal propensities among countries, those with higher growth rates tending to have a lower marginal propensity to consume.

Making use of the habit-formation hypothesis of Houthakker and Taylor, Swamy also finds substantial differences in estimates of time series saving functions from one country to another.** The parameters of the dynamic saving function are found to vary with the level of economic development of the country.

A somewhat different hypothesis altogether is advanced by Less to explain why the saving-income ratio is higher in developed than in less developed countries.*** The explanation advanced by Less is that, "a country's aggregate savings rate is lower, ceteris paribus, to the extent that it has more dependents in its population" (Page 888). Logarithmic linear regressions of the saving-income ratio on income and on variables measuring the proportion of dependents (both the very young and the very old) using individual countries as the observations provides support for this hypothesis, with dependency variables being statistically significant and having the appropriate negative signs.

*Singh, Balvir, and Drost, Helmar, "An Alternative Econometric Approach to the Permanent Income Hypothesis: An International Comparison," Review of Economics and Statistics, 53, November 1971, 326-34.

**Swamy, Subramanian, "A Dynamic Personal Savings Function and its Long-Run Implications," Review of Economics and Statistics, 50, February 1968, 111-16.

***Less, N.H., "Dependency Rates and Savings Rates," American Economic Review, 59, December 1969, 886-96.

6. Attitudes and Buying Plans

The great debate over the relative value of consumer attitudes versus buying plans seems to be turning out in favor of attitudes. In particular, the University of Michigan Survey Research Center Index of Consumer Attitudes has been found in a number of studies to make net contributions to the explanation of the variation over time in consumer spending, especially for durable goods, after income and other variables have been taken into account. For the period, 1952-61, Eva Mueller reported that the attitudinal index made such a net contribution even when a buying plans variable was included as well, while the latter lost significance.* More recently, in a study covering the years, 1953-67, Juster and Wachtel found that plans and anticipations variables alone provided about as good explanations of durables goods demand as income, prices and other objective variables, and that the combination of the two sets of variables was more effective than either set alone.**

A roughly similar set of findings was obtained for Canada. There a study by Shapiro and Angevine of quarterly 1960-66 data showed that a composite attitudinal index similar to the SRC index was significant in explaining auto and other durable goods purchases even after including income and other variables, and that it improved predictive accuracy for 1967.*** A buying intentions variable was less effective.

*Mueller, Eva, "Ten Years of Consumer Attitude Surveys: Their Forecasting Record," Journal of the American Statistical Association, 58, December 1963, 899-917.

**Juster, F.T., and Wachtel, Paul, "Anticipatory and Objective Models of Durable Goods Demand," American Economic Review, 62, Sept. 1972, 564-79.

***Shapiro, H.T., and Angevine, G.E., "Consumer Attitudes and Buying Expenditures -- An Analysis of the Canadian Data," Canadian Journal of Economics, 2, May 1969, 230-49.

While buying intentions data still may be more significant than attitudes on a cross-section basis, their value for prediction remains to be established. These data are collected on a quarterly basis by the U.S. Bureau of the Census* and were modified in 1967 to refer to a scale of 11 subjective probabilities. However, except for the Juster-Wachter study, the data have not been found of much net value for time series prediction, which may possibly reflect our lack of knowledge how to use these data, as Juster and Wachter have argued. On the other hand, attitudinal indexes are by now incorporated in econometric forecasting models, though no specific study seems to have appeared of their value in this sense. Indeed their forecasting record is as yet by no means fully established. Thus, in one recent study Burch and Stekler find that while the SRC attitudinal index improves goodness of fit substantially when added to a regression equation for consumer expenditures, their forecasting accuracy is not much better than that of two naive models.** All major turns in expenditures were predicted by the equation but many not in advance and there were a number of false signals.

What makes an attitude index tick? The answer, to judge by extensive work by Gerald Adams, is the short-term business outlook, one of the five components of the index. Using principal components analysis, Adams reported much overlap among the attitude components but the short-term business outlook is the key component in the index.*** For this reason, Adams felt

*U.S. Bureau of the Census, Consumer Buying Indicators. Current Population Reports, Series P-65.

**Burch, S. W., and Stekler, H.O., "The Forecasting Accuracy of Consumer Attitude Data," Journal of the American Statistical Association, 64, Dec. 1969, 1225-33.

***Adams, F.G., "Consumer Attitudes, Buying Plans, and Purchases of Durable Goods: A Principal Components Time Series Approach," Review of Economics and Statistics, 46, Nov. 1964, 347-55.

that attitudes were more likely to be relevant for time series analysis than for cross-section analysis, a point he documented in a later study in which he reports that comparisons of variances of both cross-section and time-series data reveal differences of a magnitude to suggest that the two types of attitudes are entirely different.*

To what extent might an attitude index simply be a proxy for other, more easily measurable variables? The closest approximation so far seems to have been stock market prices but even they were effective substitutes for only part of the (1952-62) period covered in a study by Friend and Adams.** Little work seems to have been done since then, however, on the value of security price indexes in this respect.

Also, "attitudes are highly correlated with other cyclical indicators, particularly those relating to employment conditions," according to a study by Adams and Green of 1955-63 time series using SRC data.*** Using current variables, a goodness of fit (R^2) as high as .85 was obtained, but attempts to predict attitudes using lagged variables were much less successful, with values of R^2 less than .6. In other words, the weight of the evidence as of this writing favors the by now classic observation of George Katona that attitudes make a net contribution to our understanding of economic behavior by supplementing our measures of ability to buy with a measure of willingness to buy.

*Adams, F.G., "Prediction with Consumer Attitudes: The Time Series Cross-Section Paradox," Review of Economics and Statistics, 47, Nov. 1965, 367

**Friend, Irwin, and Adams, F.G., "The Predictability of Consumer Attitudes, Stock Prices and Non-Attitudinal Variables," Journal of the American Statistical Association, 59, Dec. 1964, 987-1005.

***Adams, F.G., and Green, E.W., "Explaining and Predicting Aggregative Consumer Attitudes," International Economic Review, 6, Sept. 1965, 275-93.

Effects of Advertising

That advertising can influence sales of individual brands of a product is now well documented in the marketing literature. In a classic study, Palda showed that sales of Lydia Pinkham's, the proprietary medicine, were strongly affected by cumulated advertising over the period 1907-60.* In another relatively early quantitative analysis, Telser found that advertising exerted substantial effects on the sales of the major cigarette companies and of their main brands, and that these effects depreciated just prior to World War II at a rate of 15-20 percent per year.**

The growing adoption of econometric methods in marketing analysis has produced, among other things, an increasing body of evidence of the influence of advertising on sales. Two very good examples are the study by Weiss showing how price and advertising interacted with each other in influencing the monthly brand shares of a food product,*** and the study by Bass bringing out the elasticities and cross-elasticities between sales and advertising of filter and non-filter cigarettes.****

On the more aggregative level, most discussions of the subject still seem to generate more heat than light. One exception was a regression study of advertising sales and price data for 85 industries in the United Kingdom by Doyle that found the ratio of advertising to sales to decline with

*Palda, K.S., The Measurement of Cumulative Advertising Effects. Englewood Cliffs, N.J.: Prentice-Hall, 1964.

**Telser, L.G., "Advertising and Cigarettes," Journal of Political Economy, 70, Oct. 1962, 471-99.

***Weiss, D.L., "Determinants of Market Share," Journal of Marketing Research, 5, Aug. 1968, 290-5.

****Bass, F.M., "A Simultaneous Equation Regression Study of Advertising and Sales of Cigarettes," Journal of Marketing Research, 6, Aug. 1969, 291-300.

both higher sales and prices.* An even more significant exception was the finding by Taylor and Weiserbs that inclusion of advertising outlays in a Houthakker-Taylor type of state adjustment aggregate consumption model for the period, 1929-68, yielded a highly significant (positive) coefficient.** Thus, while much work remains to be done, evidence seems to be accumulating that, whatever its merits, advertising affects consumer behavior in a variety of ways and at different levels of aggregation.

4. Assets Functions

Assets, or wealth, have played a dual role in consumer economics in recent times. On the one hand, they have been considered in their more traditional role as potential determinants of consumption expenditures, as discussed in the preceding part. Second, and more recently, increasing attention has been given to asset characteristics and to the development of what is perhaps best termed asset functions. In these functions, wealth or one of its components is the dependent variable and the objective is to explain its fluctuations either over time or among consumer units in terms of a set of determining variables. In other words, asset functions are analogous to consumption functions, except that income does not necessarily play the key role it does in the latter case.

This section deals with work relating to assets in this second role. The growing interest in such aspects is explained by the fact that assets data have become available only in the last 20 years, at least in the U.S., and time series of any length even more recently. Thus, cross-section data on

*Doyle, P., "Advertising Expenditures and Consumer Demand," Oxford Economic Papers, New Series, 20, Nov. 1968, 394-416.

**Taylor, L.D., and Weiserbs, David, "Advertising and the Aggregate Consumption Function," American Economic Review, 62, Sept. 1972, 642-55.

selected assets first began to be available in the late 1940's, from the Survey Research Center of the University of Michigan; and aggregative estimates for the nation in the pioneering work of Goldsmith in the 1950's,* and time series data on individual asset categories from the Flow of Funds estimates of the Federal Reserve starting in 1959.**

The early studies established very quickly the suspected much more highly concentrated nature of asset ownership than of income. Thus, from probably the most extensive such cross-section study in the U.S., the 1962-63 Federal Reserve Study of Family Financial Characteristics, it could be noted that the highest 20 percent of wealth holders owned about 60 percent of the wealth; and less than 10 percent owned over two-thirds of all marketable securities.*** Similar degrees of concentration are present in England, which by all indications are far larger than could be accounted for by the accumulation of saving over one's lifetime.**** Moreover, the wealth of the wealthy is heavily concentrated in variable-dollar assets (securities, real estate, own business)# and it is these assets for which wealth elasticities (relative change in one asset to relative change in total assets) are the highest.##

*Goldsmith, Raymond, A Study of Saving in the United States. Princeton: Princeton Univ. Press, 1955.

**This is the year when they first began to be published on a regular basis. The estimates go back to 1946 annually and to 1952 quarterly. Estimates for selected individual asset categories were available earlier from trade sources and from SEC sources but not on any consistent basis among assets and not always separately for the consumer sector.

***Projector, D.S., and Weiss, G.S., Survey of Financial Characteristics of Consumers. Washington, Federal Reserve Board, 1966.

****Atkinson, A.B., "The Distribution of Wealth and the Individual Life Cycle," Oxford Economic Papers, 23, July 1971, 239-54.

#Katona, George, and Lansing, J.B., "The Wealth of the Wealthy," Review of Economics and Statistics, 46, Feb. 1964, 1-13.

##Projector, D.S., "Consumer Asset Preferences," American Economic Review, 55, May 1965, 227-51; also Projector and Weiss, op. cit., Chapter 4.

Demand functions for total consumer assets or net worth have not been estimated too frequently, undoubtedly because of lack of data. At least two such studies can be reported for the United States in the 1960's, however. Crockett and Friend regressed net worth on disposable income for grouped data from the Federal Reserve 1962-63 survey data, and also net worth on normal (5-year average) income and other variables from a panel of the Survey of Consumer Finances of the University of Michigan Survey Research Center.* Their principal finding "is that the long-run normal income elasticity of total net worth and the short-run normal income elasticity of total saving are substantially higher than one..."** They also find that lagged net worth and age of head are the primary determinants of current net worth, with income becoming significant if lagged net worth is omitted. Using more complete data from the Federal Reserve 1962-63 survey, Projector and Weiss come to a roughly similar conclusion, namely, that income and age are the primary explanatory variables of net worth,*** and that the long-run normal income elasticity of net worth tends to exceed unity.****

Demand functions for assets can in theory be derived in the same manner as demand functions for goods and services, as has been done by Bierwag and Grove.# Assuming an investor's utility depends on the expected value and on the variance of his net worth, they derive a set of Slutsky-type demand equations in which the change in the optimal quantity of an asset is related to net worth effects and asset substitution effects.

*Crockett, Jean, and Friend, Irwin, "Consumer Investment Behavior," pp. 15-127 in Ferber, Robert (ed.), Determinants of Investment Behavior. New York: National Bureau of Economic Research, 1967.

**Ibid, p. 127.

***Projector and Weiss, op. cit., Chapter 2.

****Projector, op. cit., Chapter 3.

#Bierwag, G.O., and Grove, M.A., "Slutsky Equations for Assets," Journal of Political Economy, 76, Jan.-Feb., 1968, 114-27.

The estimation of assets functions has so far proceeded along two main lines, some studies focusing on one asset while others have tried to consider the demand for all assets by type of assets. Liquid assets has been the main focus of the former group, either savings deposits or demand deposits or both. Thus, in a national cross-section study of the determinants of various types of liquid asset holdings, Lee found both current income and net worth statistically significant variables (as well as various socioeconomic variables), with the elasticity of the demand for money approximately unity for income and less than unity for net worth.* In a cross-section study more restricted geographically, Claycamp reported that psychological variables were more important than either socioeconomic or asset balance variables in discriminating between savings deposit owners in commercial banks and in savings and loan associations, but this approach does not seem to have been tested on a broader basis.**

In one application of the permanent income concept, Chase found permanent income as well as prices and interest rates to be principal determinants of U.S. household demand for savings deposits over time.*** In another application of the same concept, David also found changes in savings accounts to be influenced by changes in permanent income but in addition noted that changes in demand deposits were affected mainly by transitory income in addition to price changes and other factors.****

*Lee, T.H., "Income, Wealth and the Demand for Money: Some Evidence from Cross-Section Data," Journal of the American Statistical Association, 59, Sept. 1964, 747-62.

**Claycamp, H.J., "Characteristics of Owners of Thrift Deposits in Commercial Banks and Savings and Loan Associations," Journal of Marketing Research, 2, May 1965, 163-70.

***Chase, S.B., Jr., "Household Demand for Savings Deposits, 1921-65," Journal of Finance, 24, Sept. 1969, 643-58.

****David, J.H., "Means of Payment and Liquid Savings of Households," European Economic Review, 2, Spring 1971, 303-36.

Studies estimating the demand for several assets have either considered each type of asset individually or, more recently, as an interdependent joint system. The former approach is illustrated by the time series regressions (1952-62 semi-annual) for four asset categories (marketable bonds, life insurance reserves, time deposits in commercial banks, and time deposits in other institutions) by ordinary least squares using as independent variables in each case the other asset categories as well as wealth, income and various interest rates.* Interest rates and total wealth were found to be highly significant, and income was asserted to have negligible effect. Hamburger also found that some of the assets were close substitutes for each other and that adjustment to change does not take place within a single period, which would indicate the need for a jointly-determined model.

One such model, a complete set of asset-demand functions, was derived from utility theory by Motley and applied to quarterly U.S. data for 1953-65 for four types of assets--demand deposits, savings deposits, real assets and debt.** The exogenous variables included a measure of permanent income, as a weighted average of past incomes, and transitory income, as the ratio of current to permanent income. Both types of variables were statistically significant, the permanent income less so than the transitory measure and, as in the Hamburger study, Motley found that considerable interdependence exists among the assets.

A still broader simultaneous equation approach was taken by Wachtel who also tested a time series joint determination model for four categories

*Hamburger, M.J., "Household Demand for Financial Assets," Econometrica, 36, Jan. 1968, 97-118.

**Motley, Brian, "Household Demand for Assets: A Model of Short-run Adjustments," Review of Economics and Statistics, 52, Aug. 1970, 236-41.

of assets, but with durables and consumption excluding durables as two of the four asset categories; the other two are liquid assets and consumer credit.* Based on a partial adjustment approach, this model tries in effect to synthesize the problem of the allocation of wealth with that of income using quarterly 1953-67 Flow of Funds data, and finds that transitory income more than permanent income affects three of the four categories (all but consumption excluding durables) and that lagged forms of the asset variables are especially important for the same three of four categories, with the rate of adjustment of stocks to new levels varying substantially by asset category.

In his study of saving and asset functions, Taylor found substantial differences in saving and asset propensities by age level as well as in the propensity to save and hold wealth out of transfer income compared to that out of labor income.** Asset accumulation tended to be higher in the 20's and 40's than in the 30's and over-50 age groups, and was much higher out of transfer income than labor income.

There is little doubt that this global joint determination approach represents the wave of the future. In general form, the consumer is faced with a fund of resources, which includes assets, current and expected future incomes as well as credit, and has to allocate this fund among expenditures, saving and asset forms in both the current period (an immediate decision) and in all future periods of his lifetime. The formulation becomes even more general if human capital is added to the fund of resources and use of time to the allocation alternatives, as is discussed in a later section. The problem is to develop models to explain consumer behavior in such a simultaneous manner taking into account the numerous alternatives (asset and spending possibilities) and the many uncertainties involve

5. Extensions of Consumption Theory

Within the last 10 to 15 years, the theories that underly consumer economics have been extended to a much broader range of topics that also relate to consumer

*Wachtel, Paul, "A Model of Interrelated Demand for Assets by Households," Annals of Economic and Social Measurement, 1, April, 1972, 129-40.

**Taylor, Lester, op. cit.

behavior but which in the past have received little attention from economists. These topics are perhaps best classified under the heading of social welfare in its broadest sense, and include the formation of human capital, the use of time, the components of utility, and the demand for quasi-public goods. The theoretical base is in all cases that of utility theory, namely, the consumer is faced with a utility function which he attempts to maximize in the face of certain constraints on his ability to act. By including in the utility function the variable(s) under study and in the constraint function(s) these and other relevant variables and solving the resulting system, one or more equations are obtained that serve as the basis for obtaining empirically estimates of the key parameters. How this has been done in specific cases is illustrated in this section, which is too brief to do justice to the tremendously growing volume of work in this area but will, it is hoped, provide an idea of how such problems are being handled. The topics covered, the four mentioned at the beginning of this section, are by no means exhaustive but should provide some idea how consumer economics is branching out.

Human Capital

While considerable attention has been given over the years to the role of nonhuman capital in consumer behavior, increasingly more recently to financial wealth, as noted in the preceding section, it has only been in the 1950's and 1960's that much consideration has been given to the uses of human capital and its effects. Though human capital as an economic concept was recognized many years earlier, at least as early as Marshall's time,* it was not until the work of Gary Becker, T.W. Schultz and their colleagues that the analytical possibilities of this approach began to be realized.**

*Kiker, B.F., "Marshall on Human Capital: Comment," Journal of Political Economy, 76, Sept.-Oct. 1968, 1088-90.

**See, for example, Schultz, T.W. (ed.), "Investment in Human Beings," Journal of Political Economy, 70, October 1962, Part 2. For a number of earlier articles on this topic, see Kiker, B.F. (ed.), Investment in Human Capital. Columbia, S.C.: University of South Carolina Press, 1972.

The basic theoretical apparatus was supplied by Becker, who utilized economic concepts to develop a theory of investment in human capital with a methodology of measuring the rate of return from such investment as well as its effect on earnings over the life cycle and their distribution. In what is perhaps his basic work,* Becker discusses the effect of investment in human capital on the earnings of a worker in terms of the simple equation,

$$MP_0 + G = W_0 + C,$$

where MP_0 is the initial marginal product of a worker to the firm, G is the cumulated difference between the worker's marginal product and his wages discounted over all later periods, W_0 is the initial wage and C is the sum of actual training costs and foregone opportunity costs (all assumed to be incurred in the initial period).

Using this equation, Becker shows that general training is received by employees at their expense (either through direct outlays or through wages lower than their current opportunity productivity) because of the risk of quits. However, training specific to a particular job is paid for by the firm because of the increase thereby engendered in the worker's productivity, and is accompanied by higher wages to dissuade such employees from quitting and the firm thereby losing its investment in them. The wage the employee receives is, then,

$$W = MP' - (1-a)C$$

where MP' is his marginal productivity after receiving training, $(1-a)$ is the fraction of training costs paid for by the employee, and C is total training costs, as defined before. Hence, the higher the proportion of training costs paid for by the firm, the higher will be the wage it will offer the employee.

*Becker, G.S., Human Capital. New York: National Bureau of Economic Research, 1964.

Becker uses this framework to explain a number of far-reaching phenomena, such as:

1. Because training is incurred at younger ages, earnings of a worker will be less than would otherwise be the case at lower ages, rise steeply and concavely through the middle years--the more steeply, the greater the cost of (and return) from investment in training--and then level off at higher ages. Learning experiences, incidentally, are included as part of training.
2. In a downturn, firms will lay off unskilled workers before skilled workers, and may even retain the latter if their wage exceeds their marginal product if the downturn is assumed to be temporary.
3. Formal education is in this sense conceptually the same as general on-the-job training. It too serves to "steepen the age-earnings profile, mix together the income and capital accounts, introduce a negative relation between the permanent and current earnings of young persons, and (implicitly) provide for depreciation on its capital" (p. 31).
4. Improvement of emotional and physical health is another form of investment in human capital, and firms will do so insofar as it will yield higher productivity.
5. The rate of return on investment in human capital is based on the fundamental notion that the cost of doing so "equals the net earnings foregone by choosing to invest rather than choosing an activity requiring no investment" (p. 39). Using this approach, rates of return from education are estimated; for college graduates the return is estimated at about 13 percent per year.

6. Human capital is another form of wealth entering into the consumption function, because life-cycle changes in consumption necessarily depend on age-wealth profile and hence on investment in human capital. The age-wealth profile will be sharper for cohorts with more human capital; aggregate consumer debt is higher partly because of the secular increase in human capital; and the latter also serves to mitigate the positive effect of population growth on the rate of saving.

A considerable amount of work has been accomplished since then using the same approach, especially as applied to income determination. Parsons shows that, as Becker had predicted, average quit and layoff rates are lower in industries where worker- and firm-financed specific investments in their employees are higher.* Becker has extended his own work, in collaboration with others, to develop a theory of earnings distribution based on each individual maximizing his economic welfare by investing an appropriate amount in human capital with earnings being determined by the distribution of investment and their rates of return, which are in turn influenced by inheritances, quality of opportunity, distribution of abilities, subsidies to education, and other types of human capital.** An empirical application finds that

* Parsons, D.O., "Specific Human Capital: An Application to Quit Rates and to Layoff Rates," Journal of Political Economy, 80, Nov.-Dec. 1972, 1120-43.

** Becker, G.S., and Chiswick, B.R., "Education and the Distribution of Earnings," American Economic Review, 56, May 1966, 358-69; also Becker, G.S., Human Capital and the Personal Distribution of Income. Ann Arbor: Institute of Public Administration, 1967.

about one-third of the differences in income inequality among geographic areas is due to variations in investment in formal education.

Ben-Porath extends the same concept to develop the theoretically optimal path of accumulation of human capital and the life cycle of earnings.* As he sees it, the "real output" of an individual is the sum of monetary earnings and the value of human capital produced, the latter measured by a shadow price and which is largely determined by the rate at which the individual increases his stock of human capital.** Another model to estimate lifetime earnings by race, region and level of schooling, this one treating investment in human capital as a continuous process and allowing for depreciation of human resources and autonomous growth, is developed by Johnson, who obtains net rates of return well over 20 percent per year up to college levels.***

The implications of the human capital approach for economic policy at least with regard to investment in education are reviewed in a book by Schultz**** In this book, Schultz notes among other things that the value of investment in human beings in the form of education has increased far more rapidly so far this century than investment in nonhuman wealth and

* Ben-Porath, Yoram, "The Production of Human Capital and the Life Cycle of Earnings," Journal of Political Economy, 75, August 1967, Part I, 352-65.

** A more detailed review of this and other applications of the human capital approach to labor income determination is available in an article by Mincer, Jacob, "The Distribution of Labor Income, A Survey," Journal of Economic Literature, 8, March 1970, 1-26.

*** Johnson, Thomas, "Returns from Investment in Human Capital," American Economic Review, 60, Sept. 1970, 546-60.

**** Schultz, T.W., Investment in Human Capital. New York: The Free Press, 1971.

that the rate of return from such investment tends to exceed that from most forms of nonhuman investment. With the substantial and continuing contribution to economic growth made by education,* strong economic arguments are seen to exist for growing investment in human capital in education both from a public and a private point of view.

The Allocation of Time

The attention given to investment in human capital has also served to focus consideration on the scarcity aspects of a basic input into this process, time, and has helped to establish the study of the allocation of time as a separate topic of economic analysis. Two examples are given here to illustrate this approach.

In another basic article, Becker incorporates time into the theory of consumer choice on the assumption that households are producers as well as consumers of goods.** The household produces a set of basic "commodities", Z_i , that enter directly into a utility function; these are commodities such as eating, going to the theatre, sleeping, working, etc. These commodities are produced by means of an appropriate combination of market goods (and services), X_i , and of time inputs, T_i . In other words, X_i and T_i are each vectors which enter as variables in the household production function,

$$Z_i = f_i(X_i, T_i)$$

The household seeks to maximize its utility function, $U = U(Z_1, \dots, Z_m)$, subject to a budget constraint, $g(Z_1, \dots, Z_m) = Z$, where Z defines the maximum

* Denison, E.F., The Sources of Economic Growth in the United States and the Alternatives Before Us. New York: Committee for Economic Development, 1962.

** Becker, G.S., "A Theory of the Allocation of Time," Economic Journal, 75, Sept. 1965, 493-517.

resources available to it. This restraint can be subdivided into a goods restraint and a time constraint, though these are not independent and would seem best represented by a single function. The equilibrium conditions for utility maximization is that the marginal utility of Z_i equal the sum of the marginal costs of using time and of using goods to produce Z_i .

By means of this framework, Becker shows that the treatment of time as another commodity rather than as a separate element called "leisure"* has many direct applications, including an explanation of the secular decline in hours of work (primarily because of offsetting substitution effects of the higher productivity of work time and of consumption time coupled with the high income elasticity of demand for time-intensive commodities), the length and mode of commuting to work, and the relation between family size and income. A strong case is made for the collection of data on "full income", namely, money income plus income foregone by the use of time for other purposes, as a better basis for the study of economic behavior.

A second example is the use of utility theory by Owen to develop a model for measuring the demand for leisure.** His approach is to define a utility function that depends on the hours of leisure time (L), the quantity of recreational goods and services on the market (R), and the quantity of all other consumer goods (X). The consumer then seeks to maximize the utility function, $U = U(L, R, X)$, subject to the following two restraints:

1. Leisure hours (L) plus work hours (H) equal total hours (T), or:

$$L + H = T.$$

* As in Henderson, J.M. and Quandt, R.E., Microeconomic Theory. New York: McGraw-Hill Book Company, 1958, 23-4.

** Owen, J.D., "The Demand for Leisure," Journal of Political Economy, 79, Jan.-Feb. 1971, 56-76.

2. Earnings that could be made from leisure time ($P_L L$) plus actual earnings (WH) equal total financial resources (F) for that period, or:

$$P_L L + WH = P_L L + P_R R + P_X X = F$$

These yield demand equations for L and for R , each as a function of F , P_L , P_R , P_X . Applying the theory with some modifications to time series full-employment peak data for 1900-01,* Owen obtains a positive elasticity (about .2) of leisure time with regard to relative wage rates, a negative elasticity with regard to the relative price of recreation, though only -.03, and a negative elasticity of R with regard to P_R . Overall, he concludes that about three-quarters of the rise in leisure time during this period was associated with increases in real hourly wages.

The Utility of What?

The idea of the household as a producer was advanced by Margaret Reid approximately 40 years ago,** though her focus was on the unpaid activities of household members that substitute for goods or services that could be obtained in the market.*** More recently, the general production approach as exemplified in the previous section in the development of theories on the allocation of time has also been used in an attempt to arrive at a more basic understanding of what is involved in utility maximization. That consumers buy goods not for the objects themselves but for the services they provide has long been a maxim of consumer economics. An attempt to place this idea in a more formal theoretical framework has been made by Lancaster who, in effect, looks on the household as an activity process trying to achieve certain ends. The

*Full employment estimates are needed for the model because it is only during such periods that consumers can be assumed to be exercising free choice as assumed by the model.

**Reid, Margaret, Economics of Household Production, New York: John Wiley & Sons, 1934.

***Ibid, p. 11.

approach taken by Lancaster is to link utility not to goods but to the components, or characteristics, of these goods. This approach rests on the "crucial assumption that goods possess, or give rise to, multiple characteristics in fixed proportions and that it is these characteristics, not goods themselves, on which the consumer's preferences are exercised."* Accordingly, the consumer is faced with a transformation function, $z = f(x)$, that shows how a particular collection of goods, x is transformed into a collection of characteristics, z . The objective of the consumer is to maximize the utility of z subject to the budget constraint, $px \leq y$, where p is a vector of prices and y is income.

From a theoretical point of view, this approach offers some advantages, as Lancaster points out in a later work.** Thus, it explains more concretely why a consumer may be indifferent between goods that are seemingly quite different, say, a radio and a hi-fi set--to that consumer the two goods may be viewed as possessing similar sets of characteristics. Yet, question arises whether this approach is not too different from the long-standing view expressed by so many others that consumers value goods not for themselves but for the services they provide--these services are now transformed into explicit characteristics. From a practical point of view, the measurement of durable goods consumption in terms of service flows is one manifestation of this concept.

This idea has already taken hold in the development of hedonic price indexes, whereby prices are related to the characteristics of particular products.*** It is too soon as yet, however, to discern how well the specific approach of Lancaster will take hold in the study of consumer behavior.

* Lancaster, Kevin, "A New Approach to Consumer Theory," Journal of Political Economy, 74, April 1966, 132-57.

** Lancaster, Kevin, Consumer Demand: A New Approach. New York: Columbia University Press, 1971.

*** Grilichis, Zvi, editor, Price Indexes and Quality Change: Studies in New Methods of Measurement. Cambridge, Mass., Howard University Press, 1971.

Another type of approach using household production functions is that of Muth who advances "the hypothesis that commodities purchased on the market by consumers are inputs into the production of goods within the household."* What the household seeks to maximize, therefore, is its utility from the goods and services it produces, subject to production functions relating these household goods to the "raw materials" and services purchased on the outside and to a budget restraint on available resources. A consequence of this approach is that the household demand for many goods and services is now a composite demand, and household labor becomes a major input in the home production function. Thus, the household demand for fuel is then a composite of the derived demand for fuel from cooking and the derived demand for fuel for heating, and an understanding of the income elasticity for fuel depends on the separate income elasticities for these derived demands. The practical value of this approach, however, still has to be determined.

Demand for Quasi-Public Goods

The increasing social consciousness of economists has manifested itself in a number of ways not the least of which has been the growing tendency to apply the tools of economic analysis to the study of the demand for goods and services at least partly in the public sector and for which often no clear market price may exist. Such is the case, for example, with such consumer "products" as education, health, public recreation and children. One general approach to this problem has been through the investment in, and returns from, human capital devoted to these activities, as described earlier; initially focusing on education, these studies have spread to cover other aspects of human capital. Another general approach has been essentially the same as used

* Muth, R.F., "Household Production and Consumer Demand Functions," Econometrica, 34, July 1966, 699-708.

in the past with the private sector, namely, to derive a demand function either through the use of utility theory or by a priori reasoning. However, the specification and measurement of relevant variables, especially price variables, often requires considerable ingenuity. The study of Owen on the demand for recreation, described earlier, is a case in point.

A general theoretical framework for studying the demand for education was provided by Brazer and David.[#] Illustrative of the more empirical studies on the demand for education is that by Golper and Dunn who expressed college undergraduate enrollments in the U.S. for 1925-65 as a function of real income, high school graduates (with a four-year distributed lag) and a nonmarket variable such as size of the military forces.* In a study with broader coverage, Morgan and David pinpointed by multiple regressions of Survey Research Center cross-section family data a wide number of determinants of education principal among which were age.** Estimates are given of the income associated with additional education at various age levels. In another study, Tolley and Olson used a simultaneous equations approach on 1960 data for individual states to study the interrelation between income and education.*** Among other things, they found that "nonhuman wealth is estimated to have twice as much effect on education expenditures as other forms of wealth" (p. 46). They also found that the elasticity of income with respect to education is only .07 whereas that of education with respect to income was .8.

[#]Brazer, H.E., and David, Martin, "Social and Economic Determinants of the Demand for Education," 21-42 in Mushkin, S.J. (ed.), Economics of Higher Education. Washington, D.C.: U.S. Department of Health, Education and Welfare, 1962.

*Golper, Harvey, and Dunn, R.M., Jr., "A Short-run Demand Function for Higher Education in the U.S.," Journal of Political Economy, 77, Sept.-Oct. 1969, 765-77.

**Morgan, James, and David, Martin, "Education and Income," Quarterly Journal of Economics, 77, Aug., 1963, 423-37; also Morgan, James, David, Martin, Cohen, Wilbur, and Brazer, Harvey, Income and Welfare in the United States, New York, McGraw-Hill, 1962.

***Tolley, G.S., and Olson, E., "The Interdependence Between Income and Education," Journal of Political Economy, 79, May-June 1971, 460-80.

As noted earlier, the studies discussed in connection with the human capital approach also relate to the demand for education but they need not be repeated here, except to mention that some comparison of the human capital approach to measuring this demand, in comparison with the older approach, is discussed in an article by Mary Jean Bowman.* A good example of how the two approaches interrelate is provided by a recent study by Grossman relating to the demand for health.** In this study, a model for the demand for health is constructed on the premise "that health can be viewed as a durable capital stock that produces an output of healthy time" (p. 223). Individuals are assumed to inherit an initial stock of health that depreciates with age and can be increased by investment. Their utility function over time depends on their consumption of health services and of other commodities in each period, with two sets of production functions, one for investment in the production of health and one for investment in the production of other commodities. Solving this system with reference to budget restraints for goods and for time leads to the conclusion that "a person determines his-optimal stock of health capital at any age by equating the marginal efficiency of this capital to its user cost in terms of the price of gross investment" (p. 246).

Although this model contains some drastic assumptions (such as that age of death is predicted with certainty), Grossman shows how it can serve to explain health outlays in terms of economic theory, such as that the demand for health and medical care should be positively correlated with one's wage rate, and that this demand is also correlated positively with education to the extent that the latter increases the efficiency of gross investments in health. The biological process of aging is thus represented in economic terms, for these

*Bowman, M.J., "Human Capital: Concepts and Measures," 69-92 in Mushkin, S.J. (ed.), op. cit.

**Grossman, Michael, "On the Concept of Health Capital and the Demand for Health," Journal of Political Economy, 80, March-April 1972, 223-55.

factors "raise the price of health capital and cause individuals to substitute away from future health until death is 'chosen'" (p. 240). In other words, at a certain stage death occurs because it is too expensive to go on living!

Fertility is another topic on which economists have begun to train their tools of demand analysis. One such model that has stimulated much additional work on this subject has been developed by Becker.* Using the theory of the demand for consumer durables as a framework, he derives a demand function for children as a function of tastes, income, costs, knowledge and uncertainty. He points out, among other things, that by this theory, a rise in income should increase both the quantity and the quality of children desired, cyclical fluctuations in birth rates should be less than for durable goods purchases (initial costs of the former are relatively much less), and fertility of farm families would be expected to be higher than that of urban families (former have a comparative cost advantage).

A number of economic analyses of fertility have been undertaken since then, notably the attempts by Easterlin,** Freedman,*** Namboodiri,# Schultz, ## and Schultz and Nerlove###. Indicative of the growing interest in applying the tools of economic analysis to problems of fertility and population planning is the publication of a special supplement of the Journal of Political Economy on this subject^a. As Schultz notes in the introduction to that issue, the rationale of

*Becker, G.S., "An Economic Analysis of Fertility," pp. 209-31 in Demographic and Economic Change in Developed Countries. Princeton: Princeton University Press for National Bureau of Economic Research, 1960.

**Easterlin, R.A., "Toward a Socioeconomic Theory of Fertility," in Behrman, S.J. (ed), Fertility and Family Planning. Ann Arbor: Univ. of Mich. Press, 1969.

***Freedman, Deborah, "The Relation of Economic Status to Fertility," American Economic Review, 53, June 1963, 414-26.

#Namboodiri, N.K., "Some Observations on the Economic Framework for Fertility Analysis," Population Studies, 26, July 1972, 185-206.

##Schultz, T.P., "An Economic Model of Family Planning and Fertility," 77, March-April 1969, 153-80.

###Schultz and Nerlove, Love and Life Between Censuses: A Model of Family Decision-Making in Puerto Rico, 1950-60. Santa Monica: Rand Corporation, 1970.

^aSchultz, T.W., editor, Journal of Political Economy, Supplement to March/April 1973 issue.

this approach is no longer to accept size of population as an exogenous variable but rather to attempt to explain in economic terms what accounts for changes in population and in birth rates. The human capital approach serves as a cornerstone for such an explanation, the basic view being that people invest in human beings (children) in a manner more or less analogous to the manner in which they invest in themselves and in nonhuman wealth, with a major determinant of the allocation of these investment expenditures being the cost of human time. The time variable becomes one input, with other "commodities", into a generalized household production function used by the family for deciding how to allocate its time and other resources in the production of children as well as other "outputs." Social as well as economic variables can be incorporated into such a model which, in its most general form, would provide a description (or prediction) of the lifetime behavior of the household.

The study of poverty is another area to which demand analysis has been applied. Thus, Brehm and Saving in a study of general assistance payments (G.A.P.) take the approach that "the demand for G.A.P. can be treated as a special case of the traditional theoretical treatment of the demand for leisure."* Setting up demand functions on this basis and estimating parameters from annual cross-section regressions for 1951-59 with individual states as observations, they find that the frequency of such payments is related to the amount of the payment, the unemployment rate and the nonfarm employment rate (the latter a proxy for the ease of getting on the G.A.P. rolls), all of which leads them to conclude that "G.A.P. recipients are like the remainder of consumers in that they react to economic incentives" (p. 1018). In a similar type of study, Thurow finds that

*Brehm, C.T., and Saving, T.R., "The Demand for General Assistance Payments," American Economic Review, 54, Dec. 1964, 1002-18.

variations in the proportion of low-income families among states in 1960 can be explained in terms of the quality of the labor force, the industrial structure of the state, the amount of farming and labor force participation.*

6. Considerations from Other Social Sciences**

The growing interest in consumer behavior has stimulated a great deal of work on this subject in other social sciences. Partly because of the broadening scope of the work in economics, as noted earlier, and partly because of the nature of this other work, an awareness of these studies can be very useful to economists. While it is impossible to do justice to all such work in this brief section, an attempt is made to convey some of the ways in which this work overlaps economics with reference to three key areas, namely, decision-making, the search for information, and the role of reference groups.

Decision-making

Goals and decision processes are two cornerstones of consumer behavior which have received considerable attention in other social sciences while being treated largely as given in consumer economics, though in very different ways. Thus, goals are invariably assumed a priori to consist of some sort of maximizing or optimizing behavior, depending on the theoretical model postulated; while decision processes are implicitly considered to be an intermediate step between goals and ultimate behavior that is of little consequence in itself. The findings from these other subject areas as well as from economics would seem to indicate a need for re-examination of these assumptions and possibly improving the meaningfulness of economic theory by explicit inclusion of these factors.

*Thurow, L.C., "The Causes of Poverty," Quarterly Journal of Economics, 81, Feb. 1967, 39-57.

**This section is based heavily on the author's paper, "Family Decision-Making and Economic Behavior" to be published in a symposium.

This would seem to be more clear if we pose some basic questions relating to these topics, indicate briefly current knowledge on each, and the implications of this knowledge for consumer economics.

1. Do families have common financial goals or plans; if not, might such differences affect subsequent behavior? To judge by scattered studies in home economics, an appreciable proportion of families do not have any clear financial goals or plans. Thus, in a study of parents of home economics students, Honey and Smith report that over 40% of the students in these courses reported that their parents did not have any financial plan.* In a study of the financial management practices of 426 farm families in Pennsylvania Honey reports that a major source of dissatisfaction was lack of a financial plan.** Phelan and Ruef report that clearly enunciated goals and financial plans were much more common among Indiana farmers in younger families, those better educated, in families not in the middle income range and in families where the wife was in a professional or managerial occupation.***

Where financial goals and plans did exist, Crow reports that such plans, as obtained from 65 families in New York State, were mainly concerned with financial security and increases in the level of living, with strong indications of close relationships among goals, concepts of financial security and financial

*Honey, R.R. and Smith, W.M., Jr., Family Financial Management Experiences as Reported by 179 College Students, Pennsylvania State College, School of Home Economics, Research Publication 113, 1952.

**Honey, R.R., Family Financial Management Experiences, Pennsylvania State University, College of Home Economics, Research Publication 141, 1957.

***Phelan, J.M. and Ruef, R.R., Values Expressed and Realized in Family Financial Plans, University Park, Pennsylvania: College of Home Economics Research Publication 176, 1961.

management practices.* For example, families strongly oriented toward financial security were also more likely to be concerned with job security and were strongly disinclined to go into debt.

That differing goals and plans can lead to very different behavior was highlighted in a case study by Freeman and Due of two farm families over 23 years, showing how the different goals of these families led to strikingly different expenditure and saving patterns over the years.**

This evidence is largely based on purposive samples and is in highly narrative form. The fact remains, however, that these as well as other studies of financial goals and plans suggest that many families do not have such goals in any conscious sense and, moreover, where such goals do exist they may lead to very different forms of economic behavior.# The fact that such goals and plans are more likely to be reported by younger families is in accord with the permanent income and life cycle hypotheses of consumer behavior, but it is not clear that the optimizing behavior contained in these theories would be supported on any wide basis (except perhaps if it could be demonstrated that families unconsciously act in accord with these hypotheses regardless of the existence of such goals).

*Crow, J.H., Financial Management in Relation to Family Values and Concepts of Financial Security. Unpublished Ph.D. thesis, Cornell University, 1961.

**Freeman, R.C. and Due, J.M., "Influence of Goals on Family Financial Management," Journal of Home Economics, Vol. 53, June 1961, pps. 448-452.

#A cooperative study of financial security among rural families in nine North Central states was undertaken by agricultural experiment stations in the 1950's and 1960's that produced a number of reports on this question. A general description of this research program and a list of these studies is provided in Willis, Elizabeth, Family Financial Security, Ames Iowa, Iowa State Agricultural and Home Economics Experiment Station Report 36, 1964.

2. How are Decisions made? From a theoretical point of view, the framework advanced about 15 years ago by Herbert Simon--based on the sequential steps of awareness, search for alternatives and acquisition of information, deliberation, choice and action--has stood up very well.* Even here, however, considerable controversy exists regarding the applicability of this hierarchy to different types of families. Substantial evidence has accumulated that a high proportion of consumer purchases are unplanned in the sense that no specific decision is made to consummate the purchase, not does the purchase have to be made on account of necessity. Such behavior has been found to characterize from 20 to 30% of major durable goods purchases** to approximately half of items purchased in supermarkets.***

To be sure, the possibility of a purchase may have been considered at some earlier time either by the purchaser or by the family itself but not in any overt sense. Also, it could be argued that even impulse purchases in a supermarket represent rational economic behavior to the extent that, as Stern has pointed out, this behavior gives the shopper an opportunity to adjust to special deals and to unanticipated merchandising opportunities encountered in the store.#

*Simon, H.A., Reference to be inserted.

**See, for example, Katona, George and Mueller, Eva, "A Study of Purchase Decisions," pps. 30-87 in L.H. Clark, ed., Consumer Behavior: The Dynamics of Consumer Reaction; also, Ferber, Robert, Factors Influencing Durable Goods Purchases. Urbana: University of Illinois Bureau of Economic and Business Research, 1955.

***E.I. DuPont de Nemours and Company, Consumer Buying Habit Studies, 1945, 1949, 1954, 1959; also West, C.J., "Results of a Two-Year Study of Impulse Buying," Journal of Marketing, 15, Jan. 1951, 362-3.

#Stern, H., "The Significance of Impulse Buying Today," Journal of Marketing, 26, April 1962, 59-62.

Nevertheless, these findings question whether many if not most purchases are made in a rational manner, and the extent to which purchases represent the culmination of a deliberate decision-making process involving search for alternatives, gathering of information and deliberate consideration, even allowing for the possibility that habit formation may serve as a substitute for frequently purchased articles. The families among whom such deliberate decision-making does take place are more likely to be the better educated, in the middle-income range, younger and with heads who are in professional or managerial occupations.*

Even in the case of financial decisions, it is doubtful that careful decision-making is that common. Once more, the only evidence seems to be from scattered studies in home economics. In one such case, Schomaker reports that financial problems were recognized as such in a sample of 100 farm families about half the time only as a result of necessity.** Another study of farm families in New York State found that only a third of the sample seemed to use consciously such decision-making steps as outlined by Simon.*** Although this evidence is largely circumstantial and is again based on purposive samples, the nature of the samples would seem to suggest that, if anything, decision-making of this sort in the general population may be even less frequent than is indicated by these samples.

*Katona and Mueller. loc. cit.; Ferber. loc. cit.

**Schomaker, P.K.. Financial Decision-Making as Reported by 100 Farm Families in Michigan. Unpublished Ph.D. thesis, Michigan State University, 1961.

***Dix, L.C., Decision-Making in the Farm Family, unpublished master's thesis, Cornell University, 1957.

3. Who makes decisions? Whether it is women's liberation or some other reason, the traditional patriarchal system whereby the husband made economic decisions seems a relic of the past. Although some people still maintain that "the economic function of the family is therefore primarily the husband's function,"* the preponderant evidence is that joint involvement is increasingly frequent. Among young married families the wife is as likely as the husband to be making the financial and spending decisions. Among farm families this was observed half or more of the time in studies in Wisconsin** and Pennsylvania,** as well as among rural couples in New York.**** The same was found in the more extensive urban studies of Wolgast,# Sharp and Mott,## and Ferber and Nicosia,### where at least with regard to money management, joint husband-wife decisions characterized about 30% of the couples, with husbands and wives splitting this responsibility about equally in the remaining cases.

Family roles in spending decisions tend to vary much more with the nature of the product, as has been documented, among others, by Converse and

*Blood, R. and Wolfe, B.M., Husbands and Wives in America: Dynamics of Married Life. Glencoe, Illinois: The Free Press, 1963, p. 114.

**Wilkenberg, E.A., "Joint Decision Making in Farm Families," American Sociological Review, 23, April 1958, 187-92.

***Honey, R.R., Britton, V., and Potchkiss, A.S., Decision-Making in the Use of Family Financial Resources. Pennsylvania State University, College of Home Economics, Research Publication 153, 1959.

****Wells, H.L., "Financial Management Practices of Young Families," Journal of Home Economics, 51, June 1959, 439-43.

#Wolgast, E.G., "Do Husband or Wives Make the Purchasing Decisions?", Journal of Marketing, 23, Oct. 1958, 151-58.

##Sharp, H., and Mott, P., "Consumer Decisions in the Metropolitan Family," Journal of Marketing, 21, Oct. 1956, 149-56.

###Unpublished data for 1968 based on a panel of young married couples in Decatur and Peoria, Illinois.

Crawford,* Van Syckle,** Davis,*** and Jaffe and Senft.**** Also, decision roles in the purchase of one product may be very different from that of another.#

4. What determines family roles in spending and saving behavior?

*Converse, P.D., and Crawford, C.M., "Family Buying: Who Does It? Who Influences It?" Current Economic Comment, 1, Nov. 1949, 38-50.

**Van Syckle, Caria, Practices Followed by Consumers in Buying "Large Expenditure" Items of Clothing, Furniture, and Equipment. East Lansing: Michigan State Agricultural Experiment Station Bulletin 222, 1951.

***Davis, H.L., "Dimensions of Marital Roles in Consumer Decision-Making," Journal of Marketing Research, 7, May 1970, 168-77.

****Jaffe, L.J. and Senft, H., "The Roles of Husbands and Wives in Purchasing Decisions," 95-110 in Adler, Lee, and Crespi, Irving (eds.), Attitude Research at Sea, Chicago: American Marketing Association, 1966.

#Davis, loc. cit.

The principal such socioeconomic variables appear to be youth, education and income. Thus, among rural couples in New York State, Wells found that responsibilities for money management were more likely to be shared if the couple had been married recently.* In the study reported earlier by Schomaker, involvement of the wife in financial decisions was much more frequent among families with younger heads than among families where the husband and wife had more education.**

Studies of influence over spending decisions come to similar conclusions, as is supported by Barton,*** Converse and Crawford,**** Van Syckle,# Wolgast,## and Sharp and Mott.### The one major modification is, as might be expected, that spending decisions on goods used primarily by a single member are most likely to be influenced by that individual, even if the individual is a teenager, as noted by Gibbs.####

In an examination of a number of different empirical studies on decision-making, Komarovsky comes to the conclusion that "there is greater autonomy with regard to expenditures at the bottom and at the top of the socioeconomic hierarchy than among the middle classes."##### In an evaluation of decision-making

*Wells, H.L., "Financial Management Practices of Young Families," Journal of Home Economics, 51, June 1959, 439-43.

**Schomaker, P.K., loc. cit.

***Barton, S.G., "The Life Cycle and Buying Patterns," pps. 53-57 in L.H. Clark, ed., The Life Cycle and Consumer Behavior. New York: New York University Press, 1955.

****Converse, P.D. and Crawford, C.M., loc. cit.

#Van Syckle, loc. cit.

##Wolgast, loc. cit.

###Sharp and Mott, loc. cit.

####Gibbs, M., "Decision-Making Procedures by Young Consumers," Journal of Home Economics, 55, May 1963, 359-60.

#####Komarovsky, Mirra, "Class Differences and Family Decision-Making and Expenditures," page 260 in N.N. Foote, ed., Household Decision-Making. New York: New York University Press, 1961.

from a family living point of view, Farber finds that joint decision-making is much more likely to exist if the marriage is a satisfactory one, especially when age and education of the couple are held constant.*

In addition, there is no doubt that the changing role of women in society has greatly affected family roles. Thus, in their panel data on young married couples, Ferber and Nicosia find that saving decisions are reported as being made on a joint basis by approximately four-fifths of the couples.** It would be hard to imagine such a high proportion of joint decisions being encountered in a corresponding sample of, say, 40 years ago.

A basic consideration in evaluating what determines family roles is that, as recent studies have pointed out, a purchase may involve many decisions, not one, and that husband-wife roles may vary substantially with the type of decision. Thus, Davis in a study of families in Quebec City found that the relative influence of various family members in seven different types of auto purchase decisions (when, where, how much, make, etc.) varied substantially within the family.*** In another study, Davis found that decision roles in the purchase of a car were not related to decision roles in the purchase of furniture.****

*Farber, Bernard, Family Organization and Interaction. San Francisco: Chandler Publishing Company, 1964, pp. 299-300.

**Ferber, Robert and Nicosia, F.M., "Newly Married Couples and their Asset Accumulation Decisions," in Human Behavior in Economic Affairs: Essays in Honor of George Katona. Amsterdam: North-Holland Publishing Co., 1972.

***Davis, H.L., "Determinants of Marital Roles in Consumer Purchase Decisions," unpublished working paper, Graduate School of Business, University of Chicago, October, 1970.

****Davis, H.L., loc. cit.

5. Do family roles make any difference to economic behavior? This is a key question, for if family spending and saving behavior are independent of which family member makes or influences decisions, the latter is hardly a relevant variable for economic models. Unfortunately, available evidence is highly fragmentary but such evidence as exists would suggest that the identity of the influencing family member does indeed make a difference. To quote from a recent study on the identity and influence of the "family financial officer" (FFO--the individual that exerts major control over family finances), Ferber and Lee conclude, from multivariate analysis of panel data, that, "if the husband is the FFO, the couple is likely to save a higher proportion of its income and to have a higher proportion of its gross assets in variable dollar form, that is, in the form of real estate and negotiable securities. Auto purchases also tend to be less frequent..."*

There is much anecdotal evidence that women tend to be more conservative or are more likely to favor the purchase of kitchen appliances, but no studies seem to have been made of this question other than the single one reported here. Thus, while much work remains to be done before a conclusive answer can be given to the question raised in this subsection, the studies to date do not support the hypothesis that goals and decision-making processes have no effect on spending and saving behavior.

The Role of Information

While economists have established a theoretical basis for the role of information in consumer behavior and the conditions under which information is

*Ferber, Robert and Lee, L.C., "Husband-Wife Influence in Family Financial Economic Behavior," unpublished working paper, University of Illinois College of Commerce and Business Administration, 1972.

sought, researchers in other fields--sociology, home economics, marketing-- have been establishing empirically that information uses vary substantially in all sorts of ways and do affect market behavior. To a large extent, these two sets of studies are supplementary though each group seems largely unaware of the other. Some of these interrelations are brought out in this brief review.

A theoretical basis for the value of information was provided by Stigler in 1961*. He advanced the general principle that the search for information will be carried to the point where the cost of search is equal to the expected marginal return. As extensions of this principle, he inferred that search behavior on the part of consumers will rise with the cost of the product, with the geographic size of the market and with the proportion of experienced (repetitive) buyers in the market. Advertising, especially of price information, was cited as a means of eliminating ignorance and of reducing search costs for many possible buyers all at once. Though Stigler seems to have tested these hypotheses only on the labor market,** Farley added some more generalizations from the point of view of the consumer, particularly that amount of search will depend on expected gain relative to information acquisition costs, and that heavy users of a product are more likely to engage in search processes, than light users, especially for lower prices.***

In 1970, Nelson tried to extend the economic theory to cover search for information in relation to quality of goods, distinguishing between "search goods" (those for which price and quality information is best obtained prior to purchasing the goods, such as trying on a dress or suit) and "experience goods" (where information is best obtained on the basis

*Stigler, George, "The Economics of Information," Journal of Political Economy, 69, June 1961, 213-25.

**Stigler, George, "Information in the Labor Market," Journal of Political Economy, 70, October 1962, Part 2, 94-105.

***Farley, J.V., "'Brand Loyalty' and the Economics of Information," Journal of Business of the University of Chicago, 27, October 1964, 370-81.

of purchase, e.g., food products).^{*} Though his inferences and empirical tests dealt primarily with business structure and operations, he did find support for the idea that consumers were likely to seek more advice with regard to experience goods than search goods (a conclusion that belies the author's selection of terms), and that larger sample sizes are involved in seeking information for search goods than for experience goods.

A key determinant of information search which marketing researchers have stressed, and which might have been expected of economists, is risk. Taking a behavioral approach as a basis for survey work and laboratory experiments on human subjects, Cox and his colleagues at the Harvard Business School amassed an impressive body of evidence to support the notion that, "the nature and amount of risk will define consumer information needs" (p. 613).^{**} That consumers seek information to reduce risk or eliminate uncertainty is by now widely documented in the marketing literature and would seem to constitute an essential determinant of information seeking.

Still another key determinant, this one established by rural sociologists and home economists, is the novelty of the product. Information seeking is especially high in the consideration of new products, especially with regard to the consultation of mass media in the early stages of finding about such a product.^{***} They are of main relevance in becoming aware of new products, while word-of-mouth and personal influence are reported to have substantial effect

^{*}Nelson, Phillip, "Information and Consumer Behavior," Journal of Political Economy, 78, March-April, 1970, 311-29.

^{**}Cox, D.F. (editor), Risk-Taking and Information Handling in Consumer Behavior. Boston: Harvard University Graduate School of Business, 1967.

^{***}Beal, G.M., and Rogers, E.M., "Information Sources in the Adoption Process of New Fabrics," Journal of Home Economics, 49, Oct. 1957, 620-4; also Mason, R.G., "The Use of Information Sources in the Process of Adoption," Rural Sociology, 29, March 1964, 40-52.

at the information-gathering purchase-decision stages. Whatever the sources used, uncertainty rather than risk (in the sense of an estimable probability distribution of, say, failure) is the main problem facing consumers with most new products,* and information search activity seems to be much higher for such products than would otherwise be justified by such factors as cost and durability.

What sort of people are most likely to engage in search activity? As might be expected, these people are more likely to be younger, better educated and at higher income levels.** Moreover, knowledge, and by implication search activity, of different products seems to be positively correlated, at least for food and textiles.***

There is at least one finding about consumer search behavior not easily reconcilable with utility theory, namely, that more search and more information does not necessarily produce more satisfaction with the ultimate purchase.# Is ignorance really bliss? Only further studies can tell.

Reference Groups

The role of reference groups in consumer behavior has by no means been ignored by economists, as is evident from the earlier discussion of the relative income hypotheses, especially the work of Brady, Duesenberry, and Modigliani

*The extent to which a product is really "new" is a relevant question, frequently discussed in marketing circles, but which need not be considered here.

**Roberts, J.B., Sources of Information in Food Buying Decisions. Lexington: Kentucky Agricultural Experiment Station Bulletin 85, 1963. Also for a reverse sort of evidence, see Uhl, Kenneth, Andrus, Roman, and Paulsen, Lance, "How Are Laggards Different?" An Empirical Inquiry, Journal of Marketing Research, 7, Feb. 1970, 51-4.

***Henell, Olaf, Marketing Aspects of Housewives' Knowledge of Goods. Gottenborg, Sweden: Institute for Marketing and Management Research, 1953.

#Newton, A.E., and Gilmore, D.L., "Consumer Behavior in Carpet Purchasing," Journal of Home Economics, 61, February 1969, 110-13.

in the 1940's. Much less attention has been given to this factor by economists in recent years despite the growing documentation from other disciplines of its relevance and characteristic effects.

The principal medium by which reference groups transmit their effects seems to be by word-of-mouth. This has been demonstrated by, to name a few, the social psychologist, Kurt Lewin, in a laboratory situation relating to diet changes,* by sociologists Katz and Lazarsfeld on product choice and media use,** by sociologist-journalist William Whyte on the clustering of window air conditioners by block*** and by marketing researcher Udell on purchase of small appliances.# At least one study, however, found that such influence may vary considerably with the product. Thus, Bourne found that group influence on housewives was much higher in their choosing of socially conspicuous products (such as beer or cigarettes) than of other products.##

*Levin, Kurt, "Group Decision and Social Change," 330-44 in Newcomb, Hartley, et. al. (editors), Readings in Social Psychology. New York: Henry Holt and Company, 1947.

**Katz, Elihu, and Lazarsfeld, P.F., Personal Influence. Glencoe, Illinois: The Free Press, 1955.

***Whyte, W.H. Jr., "The Web of Word of Mouth," Fortune, November 1954; reprinted in 113-22 of Clark, L.H. (ed.), The Life Cycle and Consumer Behavior. New York: New York University Press, 1955.

#Udell, J.G., "Prepurchase Behavior of Buyers of Small Electrical Appliances," Journal of Marketing, 30, Oct. 1966, 50-2.

##Bourne, F.S., "Group Influence in Marketing and Public Relations," in Likert, Rensis, and Hayes, S.P. (editors), Some Applications of Behavioral Research. Paris, France: UNESCO, 1957.

Who are these reference groups? Friends seem to be predominant, as distinct from relatives and strangers, even if the latter are specialists. Thus, in her study of financial decision-making, Schomaker found that friends were consulted 88 percent of the time, relatives 38 percent, and outside experts 22 percent (more than one answer was allowed), with all of these percentages higher for younger and better-educated families.* Feldman and Spencer found that in choosing a physician and medical services, newcomers to an area tended to rely heavily on friends, neighbors or recent acquaintances in the same socioeconomic class,** while Bell reported that many new car buyers tended to bring along a "purchase pal" to assist them in making the purchase decision who was usually a friend, neighbor or relative.***

Especially interesting from marketing research has been relatively recent attempts to pinpoint generalized opinion leaders, i.e., those who set the pace in new product adoption and in other changes in market behavior. In terms of social structure, they were noted by Eva Mueller to be generally the younger, better-educated, married and higher-income groups.# Unfortunately, however, the more recent, more highly focused studies, such as by King and Summers, suggest that within these strata the people who are opinion leaders in one product area are not necessarily the opinion leaders in other areas.## If such groups could

*Schomaker, P.K., loc. cit.

**Feldman, S.P., and Spencer, M.C., "The Effect of Personal Influence in the Selection of Consumer Services," 247-57 in Holloway, Mittelstaedt and Venkatesan (editors), Consumer Behavior, Contemporary Research in Action. Boston: Houghton Mifflin Company, 1971.

***Bell, G.D., "Self-Confidence, Persuasibility and Cognitive Dissonance Among Automobile Buyers," in Cox, D.F., loc. cit.

#Mueller, Eva, "Desire for Innovations in Household Goods," 13-38 in Clark, L.H. (ed.), Consumer Behavior: Research on Consumer Reactions. New York: Harper and Bros. 1958.

##King, C.W., and Summers, J.L., "Overlap of Opinion Leadership Across Consumer Product Categories," Journal of Marketing Research, 7, February 1970, 43-50.

be pinpointed, an interesting recursive system of reference group influence could be tested by adapting the so-called two-step hypothesis to market behavior. Originally proposed by Lazarsfeld and his colleagues in a voter study,* the hypothesis states that initially information flows through impersonal channels to opinion leaders who, by their behavior and by word-of-mouth, influence others. The hypothesis was supported by Arndt in a marketing study of a new food product** but has yet to be tested on any broad scale relating to economic behavior.

7. Future Directions

As should be evident from the foregoing pages, a great deal of new information about consumer economic behavior has been uncovered in the last dozen or so years. As a result, new analytical approaches have opened up while others have lost some of their lustre. The concept of permanent, or normal, income, the stock-habit adjustment mechanism, international comparisons of consumption and saving functions, dynamic relationships, and the determinants of human and nonhuman capital, have occupied a major part of the stage during this period. Concomitantly, econometric and statistical estimation methods have become much more sophisticated, with a growing emphasis on Bayesian estimation procedures, methods of pooling estimates from different data sets (including some Bayesian approaches), estimation of lag effects, and use of equation systems. At times unfortunately it is not clear whether a method has been developed to solve a substantive problem, or whether a problem has been created to suit the method.

Yet, a major consequence of this great amount of work has been the growing realization of how little we do know about consumer behavior and of the need

*Lazarsfeld, P.F., Berelson, B., and Gaudet, H., The People's Choice. New York: Columbia University Press, 1948.

**Arndt, Johan, "A Test of the Two-Step Flow in Diffusion of a New Product," Journalism Quarterly, 45, Autumn 1968, 457-65.

for far more work to fill in the many gaps in our knowledge. A number of specific directions of this sort for future research have been pointed out on the previous pages, and need not be repeated here. More useful would seem to be a few brief final comments on the general directions such future work is likely to take, of which there would seem to be at least five. They are, as follows, not necessarily in order of importance:

1. Unification of the different theories of the consumption function.

Each of the theories reviewed in Section 2 seems to "work" under some circumstances. No one seems to be superior to the others in all circumstances, though some are more frequently superior than others. The evidence would seem to point to the desirability of combining the unique features of each in a more general theory but how to do this remains to be determined. Any such theory would have to allow for the effects on consumption (and on saving) of both human and non-human capital.

2. Development of a theory for the role of ceteris paribus variables, particularly socioeconomic factors, in consumption. To some extent this is being done, as in the incorporation of tastes through a habit formation hypothesis. Socioeconomic variables, however, are still the stepchildren of consumption theory. They are invariably introduced as the extra though essential ingredient, like pouring salt on French fries, with no theoretical basis except to highlight other relationships and using whatever variables of this type that are available.

3. Incorporation of knowledge about consumer behavior from other social sciences. Most consumption economists seem to have reacted to the growing popularity and usefulness of interdisciplinary approaches by, if anything, drawing blinders about their eyes even more tightly lest they be contaminated by findings on consumer behavior from other disciplines. Yet, the fact remains that while many of these other studies have not been carried out at the same level of

sophistication as those in economics, they contain material of great relevance to consumer economics and suggest variables and new types of data collection that could lead to more meaningful theory. There is nothing more practical than a good theory, and all indications are that the non-economics variables coming out of these studies, such as decision-making roles, can make unique contributions in this respect.

4. Determination of human and nonhuman capital, including especially the interrelation of the two categories. Studies so far have focused on one or the other with especially notable progress in the study of human capital. The further development of the theoretical basis of each may well rest to a large extent on the integration of the two types of capital, for to a large extent each is both a supplement and a substitute for the other, depending on the circumstances.

5. Application of consumer economics analysis to the public sector. Much work of this type has already been started, as noted in Section 5. In view of the growing importance of the public sector, it is probable however that only the surface has been scratched. Thus, the approach to date has been to study the demand for one quasi-public good at a time, e.g., education or health or fertility. Since many of these quasi-public goods are interrelated (on the supply side as well as on the demand side), a logical extension would be to consider demands for a number of such goods simultaneously.

As a final comment, probably the major limitation on many of these past studies, as well as on studies that need to be done but can not, is lack of relevant data. It has become increasingly apparent that the principal need is for data on individual consumer units relating to their spending, saving, and

asset behavior (both human and nonhuman), as well as on related factors such as use of time and family composition and socioeconomic characteristics. Moreover, these data should relate to the same units over many time periods, so that changes in behavior can be pinpointed and temporal differences segregated from intergenerational differences.*

While obtaining all such data from the same units may be utopian, the need for "lifetime" panel data of this sort is growing, for such data would permit far more powerful tests of theories than is now possible. How to obtain such data is a problem not only for survey research but also for economists and policy makers. Yet, it is only with such data that interrelationships of different activities can be studied through time, and cross-section relationships reconciled with relationships involving time series aggregates. Some such data have been collected for many years for marketing purposes, and hopefully, the 1970's and 1980's will witness the availability of similar data for economic analysis.

*The need for special data has been expressed in a number of sources in recent years for example, see Friend, Irwin, "Methodology in Finance", Philadelphia: The Wharton School of the University of Pennsylvania, Working paper 1-72; also Mayer, Thomas, Permanent Income, Wealth and Consumption.

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March, 1973



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